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THE IRON TRADE REVIEW

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Vol. LXIII No. 11

CLEVELAND, SEPTEMBER 12, 1918

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God Help the Kaiser!

When "Uncle Sam" gets through Spanking Him—

and when our Sammies, and our Jackies, and our brave Marines begin to bite him; won't he itch, won't he writhe?

BUT YOU, YOU—ARE YOU HELPING?

are you buying LIBERTY BONDS?
are you saving THRIFT STAMPS?
Shame, Shame, if you are letting Our Boys "Over There" do your work—do it without your aid and co-operation.
Put your shoulder to the wheel.
Buy all you can and twice as much over.
Sell the automobile; do without sugar; give up.

Help Our Boys

Uncle Sam needs all our assistance.

Give—Buy—Sacrifice—Aid

HUNT DOWN THE HUNGRY HUNS.

The Cincinnati Iron & Steel Company

CINCINNATI, U. S. A.

Sellers of Iron and Steel Products

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H. KOPPERS COMPANY

Builders of

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CONSULTING ENGINEERS

on the operation of

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UNION ARCADE BUILDING
PITTSBURGH, PA.

THE IRON TRADE REVIEW

Vol. LXIII Cleveland, September 12, 1918 *No. 11*

Prices Hold Attention of Industry

Producers Meeting Together Preliminary to Fourth Quarter Conference at Washington, Sept. 19—Pig Iron Attracts Much Interest—Government Ranks Blast Furnaces and Steel Works High in New Preference List

PRICE questions for the moment hold the center of the stage in iron and steel. Preliminary to the usual quarterly conference in Washington next Thursday, Sept. 19, with the war industries board, numerous group meetings of producers in various lines are being held. There is a well defined expectation in some quarters that the government in fixing schedules for the final three months of the year may recognize price inequalities in certain lines and make allowances accordingly. Interest especially has been turned upon pig iron, the producers of which have been holding a two-day conference in New York, this week. The widening gap in production costs in various districts due to higher ore, freight charges, dissimilar labor conditions, etc., has become a more insistent factor. Eastern, Virginia and Tennessee producers have been pressing their claims for special treatment. A Pittsburgh basing point, modified zone plan and other price proposals are receiving consideration as means toward offsetting this disparity.

On the eve of the new price decisions by the government, another collection of price recommendations has been made to the industry through the American Iron and Steel institute. These include a new schedule on wire rope and some revisions in tin plate, steel castings and hoops and bands.

Gets Right Of Way

Government machinery is being centered more upon the upholding or stimulating of production in pig iron, coke, raw steel and certain rolled lines where the immediate demand is most pressing, such as shell steel and plates. The high ranking given to blast furnaces, to steel works including billet, blooming and slab mills, to plate mills and to coke plants in the enlarged classification of essential industry issued by the war industries board further signifies this purpose. These several industries are listed in class 1. As such they are entitled to first preference in labor, fuel and transportation, as well as other essentials. It has been the elements of fuel, transportation and labor that have imposed the greatest check upon iron and steel production, and this problem has been growing. Of especial importance to the iron and steel industry is the statement that the preference list will guide the war department in the granting of industrial exemptions from the new draft. Not all branches of the rolled steel industry are ranked as high as plates and shell forms. Rail mills, "when rolling rails," tin mills and other finishing plants are given a secondary rating. While the new preference list is an elaboration of the first preference list issued April 6, 1918, and forms the basis for all priority with regard to the requirements of production, it more specifically catalogs essential industry and shows more clearly in what directions official stimulus to production is believed to be necessary.

Conservation Goes Ahead

Measures directed at the conservation of steel are going forward constantly. Tin plate mills dating from Oct. 1 will be kept within a 70 per cent rate of operation and will be supplied with steel only to that extent. This means a drop of 20 to 25 per cent from present operations, but this is timed so that the demands for food containers will have been well covered. Certain classes of wire users further are being denied tonnage because the mills or steel have been devoted to more urgent needs. Builders of pleasure automobiles are calling upon the mills for material to enable them to carry through by Jan. 1 the 25 per cent program agreed upon with the war industries board. Buying of shellmaking machinery by some of these plants reveals the course they will take in complying with the government order to be on a 100 per cent war basis after Jan. 1.

Big Demand For Basic

The demand for steelmaking iron remains intense. The Steel corporation is in the market for 40,000 tons of first quarter basic for two eastern subsidiaries. The government has been seeking 50,000 tons of basic for munitions production in the East. Allocations of steelmaking grades in the week totaled 60,000 tons.

SEPTEMBER 12, 1918

THE IRON TRADE REVIEW

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War Industries Board Issues Elaborated Classification of Industries and Plants Entitled to Preference Treatment—New List Supersedes Preference List No. 1 and is Master Key Governing Supply of Basic Needs.

Developing the Personal Power

ONE of the big things which the war is accomplishing is the awakening of personal responsibility. Men are being made to feel their individual part in the great enterprises that are being conceived, organized and carried to realization in the supreme war effort that the nation now is making. Likewise they are being made to picture what disaster and loss to their own self, failure in war would mean. It is in fact only by drawing forth the utmost and whole-hearted efforts of the individual that the wonderful story of American achievement is being written. The best executive and directing minds of the nation have recognized this fact in war, no less than they always have appraised it as a big factor of their success in peace time undertakings. The case of Mr. Schwab in the shipyards clearly illustrates what fine results are possible by raising the individual effort to its highest form through appeal to manly pride and responsibility and by the power of personal contact.

There is still plenty of room throughout the industrial field for extension of these progressive, wonder-working methods. A splendid opportunity to employers to do this is presented in the approaching campaign for the fourth Liberty loan for about $6,000,000,000. Employers generally should pursue with intelligent enthusiasm the plan of "win the war" meetings proposed as means to aiding the rapid flotation of the coming loan. The results of such action will not only be helpful in the loan drive, they will be of permanent benefit to the nation through the development of a keener realization by the worker of the importance and dignity of his individual job and the necessity for personal responsibility and helpful teamwork.

Every employer can be a leader and a center of influence in this work, no matter how small his business may be or how few the number of his employes. The man who is in a relatively small circle may not hold so pretentious a meeting. But the man who will quietly call a dozen employes around him and informally, thoughtfully, lead the discussion into win-the-war channels, pointing out the importance to the individual of doing his best in support of Liberty loans and all other war activities, can do a real service in this way. It can be so well done in no other way. And ten thousand such little meetings should produce an enormous aggregate result.

No matter how great or small the opportunity may be, it should be grasped by the employer and developed under a definite and systematic plan. On pages 16 and 17 of this issue of THE IRON TRADE REVIEW, there is outlined an organized method for the most effective co-operation of employer and employed and for the promotion of such teamwork that gets both present and lasting results. It should be carefully consulted by every man in the iron and steel industry who serves in a supervising capacity over the work and energies of others.

Sacrifices Must be Endured

ENORMOUS demands being made by the government for military supplies mean that the distinction between less essential and essential consumers of pig iron and steel must be defined still more sharply. No doubt this will work extreme hardships upon many engaged in lines of business which ordinarily are of great importance and it may disrupt well established organizations whose recovery after the war may entail a serious problem. Such is the fortunes of war. Business is not and cannot be as usual during war.

Conversion of a number of mills in the steel industry in order to increase the output of rails, plates and shell rounds necessarily will curtail further the production in other lines, such as bars, pipe and wire. Consumers of these products will suffer accordingly. Supplies for jobbers will become still smaller. But their sacrifices are so many steps in the direction of the most important goal, which, of course, is a decisive victory. To attain this victory—the only victory that can be tolerated—the enemy must and will be given a knockout blow. Delivery of that blow probably is

much further in the future than many of the optimistic remarks being heard today, would indicate.

This blow cannot be landed unless our armies and those of the allies are supplied adequately with steel for munitions and numerous other purposes. The steel director declares the estimated requirements of the government up to July 1, 1919, will exceed by several million tons the capacity of the industry. Those who hesitate to see the seriousness of the situation and do not willingly readjust themselves to it are not truly patriotic.

The iron and steel industry has pledged itself fully to serve the government. This means that consumers are not expected to make demands on producers unless they are absolutely essential to the successful prosecution of the war. If sacrifices are not made today, the cost tomorrow may be out of all proportion to the present disadvantage.

Labor Shortage Now Looms Large

TROUBLESOME days are in store for the manufacturer. Despite all his planning, thinking and scheming to ward off the labor shortage, he knows he has a hard row to hoe. For more than a year now he has been working his plant at full capacity. There have been times when work was temporarily delayed, due to a lack of materials, etc. Traffic congestion also slowed up his production, but as a rule his shop produced in quantity as well as quality. Men have left him to cross the sea to fight the Hun. He has tried his best to get others to replace them, and when it seemed impossible, he obtained female labor.

But now the time draws near when the shoe will pinch harder than ever. Uncle Sam demands quantity production. Uncle Sam also asks for soldiers. Before congress recently General March, chief of staff, said, "Four million Americans will be in France by June of 1919." If this eventuates it will mean there will be a shortage of 4,000,000 men in the shops, mills and factories of America. These men must be replaced.

And with 4,000,000 men in France, production will have to be doubled. Those men must be kept armed and well supplied with ammunition. From present indications the manufacturer faces an uphill climb, and unless some genius devises a labor remedy, the climb uphill is going to be over a rough road. The difficulty, however, will be overcome, as it has been in France and England. At no other period in the history of the country has the manufacturer faced such a task as he does now. The work or fight order only partially alleviated the labor shortage. Recently at Pittsburgh the federal employment service devised a scheme of obtaining labor for that district, which embraces probably more essential industries than any other in the country. The plan is simply to bring an influx of workmen from all parts of the country to Pittsburgh. This is all right as far as the Pittsburgh district is concerned, but what about the Cleveland, Chicago, Milwaukee, Birmingham and other centers? They too need labor.

It is to be hoped that the labor board at Washington will work out the knotty problem shortly. At present plans are afoot to define essential and nonessential work. This will be a hard proposition but with effort from everybody interested, and all manufacturers are interested, the situation should be relieved. In the meantime the only course for the manufacturer to pursue is to depend on his good luck, work for success, hire women where possible, and take the situation in general as did the Yankee soldier who said, "It's a heluva war, but it's the only one we've got." With this spirit, and he's got it, the manufacturer, who is holding the second line of defense, is going to win his labor battle, just as sure as the Yankee army is going to win the battles across the seas.

Need Protection from Landsharks

RECENTLY federal authorities forced several landowners to turn over their properties to a large munition plant, so that the land could be utilized as a site for an addition to the war plant. From the reports of the transaction, it develops that although the company had been willing to pay a fair price for the land, the owners demanded an enormous sum. Their obstinancy and refusal to come to terms with the factory officials tied up the production of munitions.

The plant, one of the largest in the middle-west, and one which has many war contracts on hand, found it necessary to expand, if it was to fill its orders for munitions for our soldiers in France. The property adjacent is an ideal site for an addition, so negotiations were entered into. The plant officials dickered and tried their best to suit the landowners, but to no avail. Finally the aid of the federal authorities was sought, and after due consideration they ruled the land should be turned over to the company. The price to be paid for the site will be decided by a competent jury.

This is not the first case of this kind which has been disclosed during the past few months. Many landowners are of the opinion that because a firm engaged in making war materials is anxious to buy their property, they can hold out for enormous sums. The way this has been practiced in some cases is nothing but a plain case of holdup, and is as great an aid to Germany as the man who practices sabotage. In a time of war, the question of a few dollars additional profit should not be permitted to hold up the production of war materials.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 642

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.60
Basic, Pittsburgh	33.40
Basic, eastern Pa.	32.00
Basic, Buffalo	32.00
Malleable, Pittsburgh	34.90
Malleable, Chicago	33.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No .2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	34.40
No. 2 foundry, Cleveland	33.00
No. 2 foundry, Ironton	33.00
No .1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	37.10
No. 2 southern, Chicago	38.50
No. 2 southern, Phila.	40.10
No. 2 southern, Cleveland	38.50
No. 2 southern, Boston	41.00
No. 2 southern, St. Louis	39.75
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	37.60
Virginia, No. 2X, Jersey City	37.90
Virginia, No. 2X, Boston	38.20
Gray forge, Pittsburgh	33.40
Silveries, 8 per cent, furnace	45.50
Silveries, 8 per cent, Chicago	48.50
Low phos. standard, Phila.	56.00
Low phos. Lebanon, furnace	50.00 to 52.00
Low phos., Pittsburgh standard	54.40
Charcoal, Superior, Chicago	37.70 to 38.00
Charcoal, Superior, Buffalo	37.50
Charcoal, southern to 2 per cent silicon	50.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace.	75.00
Ferrocarbon titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, third quarter, Pitts.	150.00 to 152.50
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	150.00 to 152.50
Bessemer ferrosilicon, 10 per cent	55.00
Bessemer ferrosilicon, 11 per cent	58.30
Bessemer ferrosilicon, 12 per cent	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown.	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, Phila.	3.73c
Bar iron, Chicago	3.50c
Bar iron, Cleveland	3.67c
Bar iron, New York	3.745c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base.	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh.	3.95
Polished staples, Pittsburgh.	3.65
Galvanized staples, Pbgh.	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.	
Four-inch, Chicago	64.80
Six-inch and over, Chicago	61.80
Four-inch, New York	65.70
Six-inch and over, N. Y.	62.70
Four-inch, Birmingham	58.00
Six-in. and over, Birmingham	55.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts, stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Sept., per bundle	$1.95

RIVETS

Structural rivets, Pittsburgh.	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets ⅞ in. & small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f.o.b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–5 off
Cut thread	40–10–5 off
Larger and longer	40 off

MACHINE BOLTS

(¾ x 4 inches, hot pressed nuts)

Rolled thread	50–10–5 off
Cut thread	50–5 off
Larger and longer	40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products September 11, average for August 1918, average for June 1918, and average for September 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Sept. 11, 1918	Average prices Aug., 1918	June, 1918	Sept., 1917
Bessemer pig iron, Pittsburgh	$36.60	$36.60	$36.38	$48.27
Basic pig iron, Pittsburgh	33.40	33.40	33.17	43.95
*No. 2 Foundry pig iron, Pitts.	34.40	34.40	34.17	48.95
*No. 2, Foundry pig iron, Chi.	33.00	33.00	33.00	49.50
Lake Superior charcoal, Chicago	37.70	37.70	37.50	59.50
Malleable, valley	33.50	34.90	34.67	50.57
Malleable, Chicago	33.50	33.50	33.50	49.50
**Southern, No. 2, Birmingham	33.50	33.50	33.50	43.50
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	49.25
Basic, eastern Pa.	32.00	32.00	32.00	49.50
**No. 2X Virginia, furnace	33.50	33.50	33.50	50.75
**No. 2X foundry, Philadelphia	34.50	34.50	34.25	52.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	378.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	73.75
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	82.50
Open-hearth sheet bars, Pitts.	51.00	51.00	51.00	82.50
Open-hearth billets, Pitts.	47.50	47.50	47.50	73.75
Steel bars, Pittsburgh	2.90	2.90	2.90	3.72
Steel bars, Chicago	3.17	3.17	2.90	4.10
Iron bars, Philadelphia	3.73	3.73	3.685	4.935
Iron bars, Cleveland	3.64	3.64	3.64	4.50
Iron bars, Chicago mill	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.27	3.00	4.46
Beams, Pittsburgh	3.00	3.00	3.00	3.75
Beams, Philadelphia	3.23	3.23	3.185	4.435
Tank plates, Pittsburgh	3.25	3.25	3.25	6.81
Tank plates, Chicago	3.52	3.52	3.25	7.33
Tank plates, Philadelphia	3.48	3.48	3.435	7.75
Sheets, blk., No. 28, Pitts.	5.00	5.00	5.00	8.75
Sheets, blue anld., No. 10, Pitts.	4.25	4.25	4.25	8.50
Sheets, galv., No. 28, Pitts.	6.25	6.25	6.25	9.68
Wire nails, Pittsburgh	3.50	3.50	3.50	4.00
Connellsville furnace coke	6.00	6.00	6.00	9.62
Connellsville foundry coke	7.00	7.00	7.00	12.50
Heavy melting steel, Pitts.	29.00	29.00	29.00	35.50
Heavy melting steel, eastern Pa.	28.50	28.50	28.50	31.25
Heavy melting steel, Chicago	29.00	29.00	29.00	32.63
No. 1 wrought, eastern Pa.	34.00	34.00	34.00	44.50
No. 1 wrought, Chicago	33.50	33.50	33.50	40.50
Rerolling rails, Chicago	34.00	34.00	34.00	41.23

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(For Additional Prices See Page 642)

Steelmaking Iron Demand Intense

Steel Corporation Seeks 40,000 Tons of Basic for Eastern Plants—Government Wants 50,000 Tons for Munition Production—New Allocations of Steelmaking Grades Total 60,000 Tons—Price Meetings Hold Interest

Philadelphia, Sept. 10.—An inquiry for more than 40,000 tons of basic pig iron for first quarter of 1919 shipment is in the market from the United States Steel Corp. This iron, it is understood, is for the subsidiary companies of the American Bridge Co. and the American Steel & Wire Co. and will be shipped to plants in this district and in New England. Much interest prevails in pig iron circles concerning the forthcoming action by the government on fourth quarter prices. Eastern producers are attending conferences in New York this week at which the question of prices is being considered in all different phases. The problem is regarded as extremely complex. In some quarters it is felt that the war industries board is not inclined to allow further price advances covering business taken this year. Nevertheless some eastern Pennsylvania, Tennessee and Virginia furnaces will make an urgent appeal for advances owing to the sharp increases in their operating costs. Allocations of basic and foundry iron to eastern furnaces continue to represent a considerable tonnage. The Oxford, N. J., furnace of the Empire Steel & Wire Co. has been blown out for relining. This stack has been making basic and its unfilled allocations probably will be reallocated to other furnaces.

Will Carry Over Tonnage

New York, Sept. 10.—Pig iron sellers in this district are not accepting any business for 1919 shipment, although some business was booked by certain interests several weeks ago. The 1919 situation remains extremely uncertain. Some furnace interests have sufficient allocations ahead to keep them busy the remainder of this year, without touching their back orders. These interests are assured of continuous operation the first quarter or four months of 1919, if they do not receive another pound in new business or allocations. Practically no seller expects to catch up with all his orders and allocations during 1918 and so present prospects are there will be no wholesale offering of iron for the first half of 1919. The present system of allocations is causing some unusual situations. Producers in some cases are being allocated tonnages of iron for consumers with whom them had previously had differences and whom they had no intention of selling again but now they have no choice in the matter. Again, some producers are unable to take care of the contracts of good customers whom they desire to please but whose requirements are allocated elsewhere. It is a case of gain here and lose there but sellers point out that trade "goodwill" is only a secondary consideration. The general conferences of pig iron producers over fourth quarter prices scheduled here for Wednesday and Thursday are awaited with much interest. The general feeling in the trade is that an advance should be granted by the war industries board as the producers are able to make a pretty strong case. Some southern furnaces have experienced a 250 per cent increase in the freight cost on raw materials, while labor and other costs have risen materially. Northern furnaces must pay an increased price for ore as well as freight increases. Some merchant operators assert they cannot see their

way to operate under the new higher cost conditions without an increase in the selling price.

Government Seeks Basic

Pittsburgh, Sept. 10.—Business in pig iron in this district is becoming more and more a matter of allocation. Inquiries are numerous enough, but furnace interests cannot do much with them in view of the fact that already a large part of production has been allocated and while Washington has not said so in so many words, it is plain that it is the wish of the authorities that the furnaces enter into no contracts that in any way might interfere with the future distribution of the supply. The government has been seeking 50,000 tons of machine-cast basic iron for munition manufacture, in the East, and has endeavored to obtain this lot from steelmakers in the valleys. At this time the order has not been definitely placed. Demand covers both foundry and steelmaking iron, but on account of the extension of the war program involving much greater tonnages of steel, the most insistent demand is for the steelmaking grades. Production is making a steady, gradual increase and might be going forward with some speed if it were not for the fact that coke continues of poor quality and in a large measure offsets any benefit that accrues from the fact that the weather is favorable for blast furnace operations. Receipts of coke are large enough for wants, but there is no excess supply, for the reason that the inferior quality means a much larger consumption per ton of iron than would be the case with clean fuel. It is believed that the court awards of refunds to iron companies on poor coke will have a salutary effect on the makers, and that the appointment of a coke inspector by the fuel administration also may result in a better grade of fuel being provided.

Wonder About 1919 Supply

Buffalo, Sept. 10.—Opinion differs in this territory as to the probable adequacy of the supply of iron for this year's essential work, but the concensus appears to be that there will be sufficient iron for 1918 needs of this class, though there will not be as much as consumers would like. The 1919 supply is a different proposition. None will venture to hope for sufficient iron for next year's requirements. There does not appear to be any 1919 contracting going on now as far as that contracting which was done before, makers appear to think it is not worth the paper it is written on. The announcement of new classifications of industries Monday clarifies the situation in the opinion of most makers, making it easier for shippers to determine classification of their orders and send their reports to the government. The classification was described by one furnaceman as "automatic". This same interest in looking over its books during the week, analyzed 95 per cent of its business as direct war business and "essential lines" business. This furnace is sold through on foundry and malleable and can only fill war orders calling for basic. Allocating is going on steadily, and there were some sales of carload lots during the week, to small interests which claimed they would be forced to suspend without it. Their claims were investigated and the tonnage given them.

Steelmaking Demand Large

Cleveland, Sept. 10.—Large demands for steelmaking iron continue to be sought from the government through the allocation process by melters engaged in producing war and essential work. The shortage in steelmaking grades continues marked notwithstanding the fact that various furnaces recently have been switched over to basic from foundry iron. A commentary on this situation is that all six furnaces in Cleveland which at times have been sellers of iron now are producing basic. Two of these have been changed over very recently and two others ran on foundry and malleable in previous months. Similar conditions appear in other districts. This continues to lead to increasing difficulty of foundry consumers to get metal and to larger allocations in their behalf. Orders placed for government work through the pig iron committee during the week total 81,000 tons, including 29,000 tons of basic, 21,000 tons of low phosphorus, 16,000 tons of foundry, 11,000 tons of bessemer, 3000 tons of malleable and some scattered lots. This increased the total allocations since May 1 to 915,000 tons. Some selling of iron for the first half of 1919 delivery to consumers engaged in war work continues to go forward, but this is less vigorous. Producers are collecting the data from their customers and are beginning to make amplified returns to the steel director showing stocks at furnaces and in customers yards, unfilled tonnage, shipments, direct and indirect government business, etc., which became effective Sept. 1.

Cut Off Some Melters

Chicago, Sept. 10.—Pig iron melters who have omitted to make reports covering their receipts and consumption of iron during August probably will have much difficulty in obtaining shipments during September. Furnaces and selling agents are instructed by the government to regard all such users as in the nonessential class in case their reports are not received in time to be included in the general report, which must be forwarded not later than the tenth of each month. In some cases, orders have been issued to furnaces not to ship to these delinquents during September. Selling of northern iron for delivery during first half of 1919 is being done on a small scale, producers not urging consumers to buy. The business being booked is coming from regular customers and is in proportion to their previous purchases. Some of the heavier consumers in this district have already covered but the total iron now on contract is not large. Every effort is being made to produce as much as possible and to distribute it for the best interest of necessary consumption for war purposes. Southern producers are no more willing to sell than has been the case for several months and practically all the new iron available is the small quantity of off iron going forward occasionally, usually high sulphur, which is being disposed of readily. Foundries are buying spiegeleisen to assist them in using low silicon and high sulphur iron in their mixtures.

Production Is Increasing

Cincinnati, Sept. 9.—No hesitancy is made in statements of selling agencies to anyone that only essential orders can be taken care of. So far the stove foundries have been able to operate, but if information received from different sources proves to be reliable they will have to grope along during the first half with little or no iron at all. Unless a melter is known to be engaged in strictly war production work, it is a hard matter for him to secure any metal for any shipment. It is just occasionally that a carload or two, of off southern iron comes to light, and recently very little of this has been offered by anyone. What interests everyone more than anything else is the increased production in both the south and in southern Ohio. The time for making repairs on furnaces has been reduced considerably and it is a common report that labor is taking more interest in the work of increasing production. A very small amount of southern iron was sold last week, but contracting is at an end for future business.

Further Allocations to South

Birmingham, Ala., Sept. 10.—Further allocation of business to this dis-

trict is noted and apparently every ton of pig iron that can be manufactured for some time will go to satisfy government or essential wants. Reports were current the past week that selling agents of southern furnace companies had been given leave to sell a little tonnage for delivery during the first half of the coming year, but the amount of iron sold has not been stated. Inquiry elicits the universal conclusion among producers in this section that it would be foolish to take on business other than that allocated by the government and that unless production can be increased, which is a most difficult matter, the best thing to do is to hold off from the open market. Production has been showing a slight improvement. Alabama was given credit for 209,939 tons in August against 200,146 tons in July, though the production in August, 1917, went to 231,990 tons. Curtailment of iron production will be necessary with the Alabama Co. because of the accident to the coal mines at Lewisburg. Very little off-grade iron is available in this district. Railroad car service has been good right along, and this, as stated before, is responsible for the steady dwindling of the stocks on furnace yards.

Stove Foundries Seek Orders

St. Louis, Sept. 7.—If possible the demand for pig iron this week here was more acute than during any preceding seven-day period since the present stringency developed. Unusual efforts are being made to get the smallest tonnages, and though the selling agencies have frequently reiterated that they have not a pound to sell, inquiries pour in steadily. There is always the slender hope that some furnace may have a small surplus, or that a few cars of off iron may filter to the surface, and no one wants to lose such an opportunity should it arise. Nothing is being sold, both producers and their representatives devoting all their time to problems of distribution. The inquiries include many for supplies well into next year. Some idea of the straits of nonwar plants can be had from the efforts being made by them to secure government business. For instance the Buck's Stove & Range Co., one of the oldest and largest stovemakers in this country, has placed a display advertisement in the dailies here soliciting work from other manufacturers in the lines in which it specializes. This company, along with numerous others, frankly states that the necessities in the matter of fuel, iron and steel have necessitated a serious curtailment in its regular output.

Users Want Better Coke

Appointment of Federal Inspector May Signify Improvement of Quality —Court Awards Refund to Consumers—By-Product Price Lowered

Pittsburgh, Sept. 10.—The chief topic of discussion in the coke trade has been the court award of a refund to two consumers who brought action because of the loss sustained by inferior fuel. The decision against the producers and the appointment by the federal fuel administration of an inspector of coke are taken by the trade here to mean the deathknell of the loading of dirty coke. Iron makers for some little time have been suffering from the poor quality of coke that has been provided and now believe that their troubles in this respect are over or are nearing their end. Meanwhile the word from the Connellsville regions is that on account of favorable weather and the fact that the men are staying on the job in good fashion, production is making steady gains. No complaint about car shortages is heard; indeed, lately, car supplies have exceeded the loading capacity, the trouble being the scarcity of labor. Although there has been no real shortage of fuel, few of the blast furnaces have been able to stock any coke and the position of these interests could be more comfortable in this respect than it is if fewer ovens were turning out foundry coke. The premium of $1 a ton on this grade is proving an inducement to its production and some action has been expected on the part of the fuel administration looking toward a diversion of more capacity to 48-hour fuel. Less furnace coke is in transit now than there was a month ago and in spite of the blowing in of some of the Frick beehive ovens, which a short time ago went down, the fear of a scarcity is still apparent. The fuel administration, it is understood will undertake to supply the Carnegie by-product ovens at Clairton with tonnage of coal equal to that diverted to the Frick beehive ovens from the Clairton ovens. Production of coke in the Connellsville region for the week ended Aug. 31, was 338,250 tons, as compared with 337,705 tons in the previous week, according to the *Connellsville Courier*.

By-Product Cut Interests Trade

New York, Sept. 9.—The announcement of a general reduction of 30 cents a ton in the base prices of by-product coke of all grades by the fuel administration aroused some interest in the trade here. The reduction was due to the general expiration of the old high priced coal contracts, the coke makers now as a rule receiving coal shipped at the ruling government maximums. It is believed that the reduction in the coke price will not affect production.

Operations Speeded Up

Cincinnati, Sept. 9.—A speeding up in operations is reported from different districts. The new 18 to 45 draft regulation is having considerable effect in keeping men at work who were previously not always working steadily. Coupled with this improvement in the labor situation there is something to say in favor of the way the railroads are moving shipments. This improvement is reported from all firms here who have had much trouble in tracing shipments some time back. One firm reports that its shipments from the Connellsville district were never better, but this is somewhat offset by another report that Wise county and Pocahontas fields were lagging a little in forwarding the fuel.

Demand Is Very Heavy

St. Louis, Sept. 7.—Dealers here report an enormous demand for coke, the volume in the aggregate being considerably greater than 30 days ago. Frantic efforts are being made by nonwar plants to secure supplies, and everything that can be used in melting is eagerly sought. The war plants are being well supplied in the main, but none of them is stocking up to any appreciable extent. Shipments are about on a parity with the past four or five weeks, but considerably better than 60 days ago. Dealers say they have absolutely nothing in the way of free coke to offer, and will not have as far ahead as they can see.

Production Lags Somewhat

Birmingham, Ala., Sept. 10.—Production of both coal and coke in Alabama is lagging a little. Railroad car shortage, unsteady labor and an accident at the Lewisburg mines of the Alabama Co. causing damage that hardly will be repaired within four weeks, are responsible factors. This shutdown will cause a curtailment of coke and iron production by the company and will affect the general production of the district, as a daily output of coal was 1500 tons.

Scrap Scarcity Extending

Rolling Mill Grades Less Easy to Obtain—Steel Shortage Pronounced —Embargo Eases Turnings Situation—May Be Extended

FOR COMPLETE SCRAP PRICES SEE PAGE 642

Chicago, Sept. 10.—Scarcity of iron and steel scrap, which has been extreme in the case of steel grades, is becoming marked in rolling mill grades and wrought and malleable iron are more difficult to obtain than they were a fortnight ago. Heavy inquiry for steel scrap is being received from the east but further permits for its shipment out of this territory are not being issued. Some tonnage is still moving from Chicago to eastern consuming points on old permits on which shipments ordinarily would have been completed several weeks ago. On account of scarcity it has been impossible to keep up to schedule. Borings and turnings are weak as there is not much demand for this class of material in this territory. Quotations remain practically the same as for several weeks past, except that rolling mill grades are advancing and about 50 cents per ton has been added to most of these items, bringing them up approximately to the government maximum. Railroad tonnages continue small, the Wabash offering 1150 tons, and the Northern Pacific 2500 tons.

Supplies at Minimum

New York, Sept. 9.—Although material is coming out in fairly good volume, the continued heavy demand for practically all grades is keeping supplies of scrap at a minimum. Heavy tonnages of turnings now are going to rolling mills, as a result of the 30-day embargo on shipments of this material to blast furnaces, a fact which indicates that the purpose of the measure is being accomplished. Some talk is heard of a reclassification of borings and turnings, but as yet nothing definite has been ascertained. Prices remain firm at the government maximum.

Supplies Still Inadequate

Pittsburgh, Sept. 10.—The supply of scrap continues insufficient for wants which are large and users would easily absorb larger tonnages were they available. Receipts are not particularly large and deliveries on contracts make for a continued diminution of yard stocks. More or less buying from other districts continues. A sale is noted of 500 tons of borings and 500 tons of turnings, to a local consumer who will pay $19 plus 3½ per cent commission and a freight differential of slightly more than $2 from the point of shipment in the Middle West. Good results have been obtained through the embargo which prohibits turnings from going to blast furnaces. This embargo expires on Sept. 22, and it is understood that the open hearth furnaces will make an attempt to have it extended. The latter interests have been getting larger consignments of turnings, but by no means a sufficient quantity to enable them to accumulate a supply for the winter. It is because of this fact that they will seek an extension of the embargo on shipments to blast furnaces. Possibility of a readjustment of prices for the last quarter beginning Oct. 1 is reflected with a good deal of activity on the part of dealers to clean up contracts.

Certain Grades Active

Cleveland, Sept. 10.—Heavy melting steel, turnings and low phos are the scrap iron and steel grades that are most in evidence. Steel and turnings are scarce and low phos is comparatively plentiful. Practically every grade is bringing the maximum at present. Car service continues to bother, dealers complaining that it takes from two to three weeks to obtain a permit to ship to Pittsburgh and the east. Cars are not overly plentiful for the Cleveland-district movement just now. The omission of any reference to the scrap iron and steel business in the war industries board's latest preference list does not bother dealers particularly inasmuch as they know full well the necessity for their product.

Need Sorting Labor

Cincinnati, Sept. 9.—Although incoming receipts have been reduced considerably there is much trouble in securing labor to sort scrap. As high as 40 cents an hour has been offered for common labor for this purpose. For this reason shipments lately have not been as heavy as usual. A dealer, who is conversant with all the trials now confronting the trade is somewhat pessimistic about the future. The smaller gatherers of scrap are not sending in anything like the usual amount, while the supply from other sources is also very much curtailed. No changes in prices may be noted

Dealers' Position Discouraging

St. Louis, Sept. 7.—According to dealers it is almost impossible to purchase scrap. Both steel and iron grades daily are becoming rarer, and prices are moving upward, so that nearly every item in the list is at or very close to the government maximum. Considerable discouragement is expressed by the middlemen. The usual sources of their supplies are rapidly drying up, and the increasing practice of the railroads to sell direct to consumers is further curtailing their opportunities for profit. There is every indication that the entire industry is undergoing a radical change of methods. One of the main factors is the gradual education of producers to sell direct to consumers, thus eliminating brokers and dealers. All grades of scrap are in urgent demand, and no consumer is able to get sufficient for current needs. Yard stocks are about as low as has been the case in recent years. A little material is dribbling in from the country. The recent request of the government to ship scrap direct to consumers is looked upon as tantamount to an order, and consumers see in it a possible loop hole by which to avoid commissions. On the other hand, dealers are insisting upon being paid the allowance, and many are refusing to sell save on that basis. Railroad offerings include 1400 tons by the St. Louis Terminal association; 4000 tons by the Wabash and 600 tons by the Mobile & Ohio. The Cotton Belt disposed of 250 tons at private sale, at government maximum figures. The Frisco offered 400 tons of rails which were snapped up forthwith. Stove manufacturers continue to buy everything they can use.

Stocks Not Heavy in South

Birmingham, Ala., Sept. 10.—Southern dealers in iron and steel scrap are keeping a fairly good sized stock on hand though it is not heavy. Mixed scrap can be obtained readily but special grades are being held by owners for the government maximum price. Cast scrap is still scarce with the consumers showing a willingness to pay almost the full government price. In no other grade however is there such a willingness. Consumers of wrought scrap have purchased quite freely. The rolling mills which resumed operations this week laid in a good sized stock. Dealers here are disgruntled over the railroad ruling as to open cars being used for hauling scrap and have appealed for a reversal of the instructions. If that

is done, it is believed some business can be obtained from the larger centers where a shortage is reported.

Draft Exemption to be Claimed

Philadelphia, Sept. 10. — General scarcity of scrap prevails and prices show firmness. The embargo on shipments of turnings to blast furnaces has improved the position of the mills but in some quarters it is suggested that the establishment of a price differential between turnings suitable for mill use and those acceptable only to blast furnaces would regulate distribution more satisfactorily. In response to many requests from the trade regarding the status of the scrap industry under the new draft regulations, the scrap committee has called attention to the communication of General Crowder, dated Aug. 2. In this communication General Crowder said the scrap industry was essential and accordingly the committee declares it is a patriotic duty of the dealers with yards to claim deferred classification for such men as are absolutely needed for operating these yards. Scrap prices for the fourth quarter were considered at a meeting of the subcommittee on iron and steel scrap in this city today, preliminary to laying this matter before the general committee of the institute.

Accumulating No Stocks

Buffalo, Sept. 10.—Demand for scrap of all kinds is heavy and dealers are able to get rid of all tonnages as speedily as contracted for. So rapidly are the tonnages snapped up that there is little or no opportunity to accumulate stocks of any description. Some dealers say that the high cost of labor leaves little incentive toward trading, on the theory that since the government price is fixed, little opportunity is left to make much of a profit. Difficulty of obtaining labor also cuts down the volume of trading. One dealer said that he would be compelled to close his yard if the new draft makes any inroads on his present force. There is a crying demand for heavy melting steel and other heavy grades.

The high record for wages has again been broken in the coke regions. The last report of the biggest wage earner gave the credit to Phillip Colliery, an Italian, employed at the mines of the Republic Iron & Steel Co. From Aug. 16 to Aug. 31 Colliery loaded 374 wagons drawing $327.25. Until the record period he averaged $80 weekly.

Speeding Up Shell Steel

Other Semifinished Forms to be Cut to Allow Heavier Production of 3-inch Rounds—England Gets Shell Billets

Youngstown, O., Sept. 11.—Sheet-bar production will be further curtailed in this district shortly because of the government's urgent need of 3-inch shell steel. Pressure has been brought to bear on the mills here for the latter material and makers are turning every available pound of steel into shell-bar channels. Consequently, the output of sheet bars will be decreased until the 3-inch shell steel demands are satisfied. The Republic Iron & Steel Co. has installed hot saws in its blooming-mill department in order to meet government specifications when rolling forging ingots. The saws will displace the shears formerly used for cropping the products of the blooming mill. Under government specifications both ends of a forging ingot must be smooth and regular in shape. Consequently the ends must be sawed instead of sheared. It is stated that each end of the ingot is sawed off in six seconds.

Shell Billets Allocated

New York, Sept. 9.—The Donner Steel Co., Buffalo, has been allocated 8000 gross tons of shell steel billets for the British government for 6-inch shells.

Using All Open Hearth

Philadelphia, Sept. 10.—Practically the entire output of open-hearth steel in this district is being diverted into steel for ship construction, for shells and for rails. The increasing output of shell steel discards is being used in the rolling of certain products such as light rails, reinforcing bars, structural shapes, etc.

Scarcity Still Noted

Pittsburgh, Sept. 10.—Scarcity of billets and sheet bars still is acute. Demand is strong for billets and considerable tonnages could be moved if they were to be had, but even small billets and shell discards are hard to find. The explanation of the scarcity of the later is that an increased tonnage is being rolled into light rails for which there are some big orders carrying high priority ratings for the coal mines, standard shapes and into reinforcing bars. Sheet bars not only are being called on to cut production to allow the crude steel to go into other channels. Sheet mills could use greater tonnages of sheet bars than they are getting. Tin plate mills are to be allowed bars sufficient for only 70 per cent operations on and after Oct. 1.

Wire Rods Allocated

Pittsburgh, Sept. 10.—Allocations of 3800 tons of wire rods for the British government has been made, but distribution of the business is not made public as there are some companies that may have to refuse the business. Basis for this fear is found in the scarcity of steel, due to the heavy diversions of ingots and the fact that the obligations of some mills on essential orders are heavy. Under the circumstances, it is considered the best policy to wait until the mills have had a chance to check up their books before announcing how the order was distributed. Demand is strong for rods and big tonnages might be turned over if available. As matters stand, production is not greatly in excess of the requirements of wire and wire products on direct and indirect government orders.

Lake Erie Ore Receipts

Ore receipts at Lake Erie ports in August, as shown by the record of *The Marine Review*, were 7,744,585 tons compared with 8,350,857 tons in July and 7,962,443 tons in August of last year. The decline last month followed a drop in the shipments from upper lake ports, which totaled 9,725,331 tons last month; 10,659,203 tons in July; and 10,146,786 tons in August, 1917.

Lake Erie docks on Sept. 1 held 8,152,214 tons against 6,705,672 tons on Sept. 1, 1917. Shipments of ore last month from these docks to interior furnaces amounted to 5,153,876 tons against 5,222,214 tons in August, 1917. For the season, such shipments total 23,552,571 tons against 21,969,248 tons up to Sept. 1, 1917.

Detailed receipts by ports follow:

Port.	Gross Tons.
Buffalo and Port Colborne	1,577,397
Erie	303,374
Conneaut	959,717
Ashtabula	1,802,324
Fairport	271,039
Cleveland	1,584,909
Lorain	538,227
Huron	296,061
Toledo	386,621
Detroit	24,916
Total	7,744,585

Auto Builders Seek Steel

Ask Mills for Material to Complete 25 Per Cent Output—Bar Mills Loaded—Export Orders Must Have Priority

Cleveland, Sept. 10.—Automobile manufacturers are calling upon the mills for such material as will round out their available stocks and will enable them to complete by Jan. 1, 1919, 25 per cent of their 1917 production of pleasure cars. This is in accordance with the recent understanding reached by the builders with the war industries board, which is based on the agreement that after Jan. 1 the industry shall go on a 100 per cent war basis. Each builder is obliged to report to the war industries board the amount of additional material he will need to carry out this program. Each shipment under permit made to him then will be marked against this tonnage. Implement manufacturers in this district still are applying to the mills for an allowance of $5 per ton on their steel, in accordance with the recent reports that they would be granted this concession. They are being advised by sales agents that the latter have no authority to make such an allowance. Sales of reinforcing bars rolled from shell steel discards continue to be more freely made. One sale to a local jobber this week amounted to about 400 tons. An allocation of about 500 tons of rounds for the manufacture of automatic machines in this territory was made to a Pittsburgh producer.

Bar Mills Are Full

Chicago, Sept. 10.—Mills producing steel bars are loaded heavily and are producing as much material as possible under present facilities for furnishing them with ingots. Government orders for shell bars are in smaller volume than formerly, although large tonnages are in prospect. Hard steel bars rerolled from rails are difficult to obtain on account of lack of rerolling rails but inquiry on this class of material has lessened recently, probably because of ill success in placing orders during the past few weeks. Lack of building activity has cut down the demand for reinforcing bars, which was active for a time. Bar iron mills continue to book a larger volume for domestic use but this business has not come forward fast enough to satisfy manufacturers of capacity operation for the remainder of the year. Mills on the Pacific coast producing chain iron for ship use apparently are overloaded and recently some orders for this class of material have been booked here for shipment to the Pacific. A recent ruling that export tonnages can be moved only after an A-1 or A-2 priority has been obtained in addition to the export license has held up shipments of bar iron as well as other iron and steel products until proper priorities have been obtained.

Bars For Ships Placed

Philadelphia, Sept. 10.—An allocation of 15,000 tons of reinforcing bars for southern yards building concrete ships for the Emergency Fleet corporation has been made. These bars will be rolled from shell steel discards. The Bethlehem Steel Co. has received 6500 tons of this allocation.

Turn Down Bolt Orders

Chicago, Sept. 10.—Manufacturers of bolts and nuts are in receipt of much inquiry but most of this is being turned down, as mills cannot handle all that is offered. Bookings are limited practically to requirements of regular customers who had not covered for last quarter. Others stand little chance of covering their needs at present.

Scarcity Cuts Shafting Output

Pittsburgh, Sept. 10.—A strong demand still exists for the larger sizes of cold rolled shafting, but because of the shortage of steel, operations are little more than 70 per cent of capacity and there is no tonnage except what is needed on direct and indirect government orders. Demand for the smaller sizes is moderate and sufficient to take care of production.

Demand Equals Output

Pittsburgh, Sept. 10.—Shipyards and other sources of consumption engaged on essential work are absorbing practically all of the output of rivets. Demand from regular commercial users is slow, but this may be ascribed to the scantiness of supplies remaining after government needs are supplied. Government orders also are taking almost all of the output of bolts and nuts. Shortage of steel keeps operations on the decline, present production being hardly more than 70 per cent capacity.

Production Still Falling

Pittsburgh, Sept. 10.—Production of steel bars continues to dwindle as a result of the increasing tonnage of ingots that is going to the mills rolling plates, rails and shell rounds. The matter of the concession of $5 a ton to the makers of farming implements apparently is as much up in the air as ever. While there is a disposition in some quarters to make the allowance, there are equally as many that are holding rigidly to old quotations. The latter want more light on why the concession should be made before allowing it.

Seized Metal

Sold By Custodian—Montana Ferro Plant to Operate

New York, Sept. 9.—Several fair sized sales of ferromanganese have been made within the past week, some for prompt delivery and some for shipment running into next year. The Anaconda Copper Mining Co. will start producing ferromanganese this month at its new electric furnace plant at Great Falls, Mont. In about 30 to 60 days the company expects to be producing at capacity. The United Metals Selling Co., 42 Broadway, New York, which sells the metal products of the Anaconda company, will also sell the ferromanganese. Inquiry for spiegeleisen also is good, and supplies of this alloy for nearby shipment are reported scarce. The price of 16 per cent spiegeleisen is steady at $75 per ton at the furnace for both spot and contracts.

Three lots of ferrovanadium in Pennsylvania warehouses were sold by the alien property custodian, last week. The first from the warehouse of the Primos Chemical Co., Primos, Pa., of 33,175 pounds, assaying 39.85 per cent, went to the Champlain Metals Co., 165 Broadway, New York, at $5.65 per pound. The second lot also from the Primos warehouse, consisting of 27,562½ pounds, assaying 40.74 per cent, went at $5.60 per pound to the Atlas Crucible Steel Co., Dunkirk, N. Y. The third lot, 26,460 pounds, sold from the Swanson warehouse, Philadelphia, assayed 39.22 per cent, and brought $6 per pound, contained. There were 12 bidders. The alloy had been bought by alien enemies and stored in warehouses. The sale attracted considerable interest.

Little activity was reported in the ferrotungsten and tungsten powder markets, but prompt supplies are scarce. An eastern steelmaker who recently sought five tons of ferrotungsten or powder per month over the last four months, is said to have placed this order at considerably below the general quotations. The market for 70 per cent ferrotungsten

is about $2.35 to $2.40 per pound, contained.

Considerable selling of 50 per cent ferrosilicon for first half has been done in recent weeks on the basis of $150 delivered. However, this market seems to be stiffening. Several sellers now are asking upwards of $160 for contract and $170 for spot.

Important Inquiry Pending

Philadelphia, Sept. 10.—Spiegeleisen appears scarce for nearby shipment and some makers are far behind in deliveries. The ferromanganese market remains quiet with inquiry very light. The McKinney Steel Co., Cleveland, has not yet closed on its recent inquiry for 1100 tons of standard ferromanganese and 3600 tons of 35 to 40 per cent ferromanganese, or their equivalent of spiegeleisen, for first half delivery.

The ferrotungsten market is much stronger. Makers now are holding 80 per cent alloy up to $2.75 per pound, and 70 per cent up to $2.50 per pound. A small lot of 65 per cent was sold at $2.30. Inquiry for bessemer ferrosilicon is rather active. Several tons of 33 to 35 per cent Canadian chrome ore have been sold at $1.60, delivered, per unit.

Contracts Are Few

Pittsburgh, Sept. 10.—Several inquiries for 70 per cent ferromanganese are still on the market, but as yet have not been closed. The market for ferroalloys generally is quiet as far as actual contracts are concerned, although 16 per cent spiegeleisen is moving steadily in small lots and small tonnages of 10 to 12 per cent ferrosilicon are changing hands. An inquiry for 3000 tons of 50 per cent ferrosilicon for 1919 delivery has recently come out; this is the largest inquiry in some time for this alloy.

Gear Makers to Meet

The semiannual meeting of the American Gear Manufacturers' association will be held at the Onondaga hotel, Syracuse, N. Y., Sept. 19, 20 and 21. An interesting program has been arranged for the meeting. Priorities will be the subject of a talk by Charles A. Otis, chairman of the resources and conversion division of the war industry board. "What is the Possibility of Women Becoming a Permanent Factor in the Gear Indusry?" is the subject assigned to W. H. Diefendorf. Trade acceptances will be discussed by C. E. Crofoot and "The Outlook for the Steel Supply" will be the subject of C. E. Stuart, secretary and treasurer, the Central Steel Co., Massillon, O.

Plate Output Increasing

Eastern Mills Now Up to 80 and 85 Per Cent—August Record Surpassed—Pacific Coast Mills Overloaded

Philadelphia, Sept. 10.—Plate mill operations in the east are making a more favorable showing and production is increasing. The mills at present are 80 to 85 per cent active. This shows a considerable improvement over August. The mills are exerting every effort to increase their output. The new 204-inch plate mill of the Lukes Steel Co., the largest in the world, now is in full operation and is getting up a good rate of production. Requirements for the ship and locomotive programs continue to push the mills to the utmost. No further large allocations have been made during the past week.

Large Output Being Absorbed

Pittsburgh, Sept. 10.—Production of plates is still forging ahead under the impetus of favorable operating weather, increased supplies of ingots as a result of tonnages being diverted from other finishing uses and increased mill capacity. Essential requirements, however, are heavy and are absorbing practically all of the current output. Shipyards and car builders are getting generous supplies. It is hinted in some quarters that these interests are accumulating stocks to some extent, but it is not charged that they have stocks greatly in excess of nearby requirements.

Boiler Steel Placed

Cleveland, Sept. 10.—Steel for 180 boilers for 60 ships to be built on the lakes for the Emergency Fleet corporation and amounting to 4000 or 5000 tons has been allocated to different mills. This material will be shipped to a large boiler manufacturer in northern Ohio. Ohio boiler manufacturers also have been receiving orders for a number of small portable boilers for shipment to France. The plate mills have been so filled with higher priority orders that scarcely anything below an A classification now is being shipped. Important eastern producers now are shipping A-6 orders for sheared plates in six to eight months and A-6 orders for universals in about four months.

Pacific Mills Overloaded

Chicago, Sept. 10.—Some tonnage of plates formerly allocated to mills on the Pacific coast have been taken from these makers and reallocated to Chicago producers. The reason for this change is that the Pacific mills were overloaded and could not approach the schedule of contract deliveries. The tonnage is not large and will be handled readily by local mills. Government allocations consist principally of ship material which run at a lower rate than during midsummer and new tonnages are now about equal to shipments. Specifications are being received in large volume and material is being produced practically at capacity.

Reduced Output

In Tin Plate to Result From Fixed Allocation of Steel

Pittsburgh, Sept. 10.—The most interesting development of the week in tinplate has been the announcement of the director of steel supply that on and after Oct. 1, the supply of sheet bars would be allocated to the mills in quantity sufficient for them to operate at 70 per cent of capacity. This action had been to a large extent expected and while it means a drop from the present rate of operations of from 20 to 25 per cent it is believed that requirements for food containers will have been pretty well covered by that date. The trade also is very much interested in the new preference list just issued. It is observed that tinplate is put in class 4. As the figures of August production figures filter in, the showing becomes more and more gratifying. In view of the fact that the first two weeks of last month were marked by excessive heat and there was a sharp decline in operations it was figured that the August figures would show up very poorly in comparison with those for July. All returns are not in, but only a few small mills are yet to report. The figures at hand suggest a decrease for August only 6 per cent compared with July, when the output was approximately 3,110,000 base boxes.

Start Hoop Mill

Operation of its 8-inch hoop mill at the McDonald plant near Youngstown has been started by the Carnegie Steel Co. This is the third unit to be completely installed at that point. Another hoop mill is being built for McDonald.

Discard Shapes Help Out

Sales of Forms Rolled From Shell Steel Are Increasing—Missing Sections Tie up Work—Awards Limited

Cleveland, Sept. 10.—Shell steel discards continue to help out considerably jobbers and fabricators who are in need of early deliveries on structural shapes. Sales of channels, angles and other shapes rolled from this material are increasing as the supply of these discards is large and growing. One seller disposed of more than 2000 tons of shapes rolled from discards in this district during the week, most of which went to a fabricator. Where the sales are being made to jobbers and fabricators, they are taking the automatic B-4 classification allowed to these buyers on replacements. Where priority ratings do not apply shipments are being made by the mills by permit of the steel director as class D orders.

New Awards Few

New York, Sept. 9.—The award of 1200 tons to the Phoenix Bridge Co. for the Pennsylvania railroad bridge at Clarion, Pa,. represents the largest business to be placed in the New York structural market during the past week. Other awards were small. No announcement has been made as to the company, or companies, supplying these tonnages. Action has not as yet been taken by the Air Nitrates Co., New York, in alloting the remaining 8000 tons required for the two government explosive plants to be erected in Ohio. The 7200 tons involved in the structural and machine shops to be built at the Mare island navy yard also are pending. Work by the American Bridge Co. in fabricating steel for the Neville island ordnance plant will not be participated in by the eastern shops. New inquiries are few.

Unbalanced Stocks Block Work

Philadelphia, Sept. 10.—Shipments of plate shapes to structural shops for other than ship work continue extremely alive. Jobbers are steadily getting further behind in stocks. An interesting angle of the steel situation is the one balanced condition of supplies. In some instances important work is being held up because a few sesential sections are missing. Thus one fabricator in the Pittsburgh district has 4000 tons of steel in his yard needed for government work, held up for lack of 80 tons. This condition has existed for several months.

Ship Needs Come First

Pittsburgh, Sept. 10.—Fabricators of steel are filled up almost to capacity with government orders and while there is not a great deal of demand from regular commercial sources, it is fortunate this is the case for the capacity is not available. As has been the case for some time, the shipyards are getting the call on current output and great trouble is reported in getting forward stock for other needs, even of an essential character.

Chicago Will Readvertise

Chicago, Sept. 10.—Bids for portions of the Michigan boulevard bridge over the Chicago river, and its approaches, will be readvertised as no bids were received on the former tender. Only one fabricator furnished figures to contractors and no contractor furnished an estimate to the city. The business will be divided on a different basis and bids will be asked again. The Laclede Gas Light Co., St. Louis, has placed 1473 tons with the Austin Co., Cleveland, for a shell shop at St. Louis.

CONTRACTS AWARDED

Chipping and annealing building for National Brake & Electric Co., Milwaukee, 325 tons to Worden-Allen Co., Milwaukee.

Initial machine shop and assembling unit for new tractor plant of Janesville Machine Co., Janesville, Wis., 500 tons to Worden-Allen Co., Milwaukee.

Shell shop for the Laclede Gas Light Co. at St. Louis, 1473 tons, to the Austin Co., Cleveland, O.

Crane runway for the American Car & Foundry Co., at St. Louis, 450 tons, to Stupp Bros. Bridge & Iron Co.

Pennsylvania railroad bridge, Clarion, Pa., 1200 tons, to Phoenix Bridge Co.

Building for New York, New Haven & Hartford railroad, New Haven, Conn., 230 tons.

Crane runway, Niles-Bement-Pond, Plainfield, N. J., 200 tons.

CONTRACTS PENDING

Bridge work for Pennsylvania railroad, 300 tons. Bids being taken.

Trench Supports

Call for Many Light Rails—8000 More Cars Placed

Chicago, Sept. 10.—Manufacturers of light rails have been receiving considerable tonnages lately for shipment to France where they are used for railroads serving the front lines as well as for trench supports. The light section rail appears to be more useful for this purpose than structural shapes and a large tonnage is utilized for this purpose. In addition to this demand domestic orders for use in coal mines make a considerable tonnage which is essential and must be furnished promptly. The effect of this situation is to defer deliveries on ordinary purchases for several months. No buying of standard steel rails for domestic railroads is expected during the present year. All rail mills have heavy tonnages unshipped on former contracts and booking of further tonnages would have no effect on the situation. The existing contracts will be invoiced at the price quoted on the contract, inasmuch as no agreed price has been made by the government at that time. Rail mills are anxious to roll more rails but are prevented by lack of ingots which are needed for plates and shell bars.

Delivery of freight cars for the United States railway administration has been slowed down by giving priority to the small cars ordered for use in France. Allocations have been completed for the steel to go into the first 10,000 French cars, but this has not been done so far for the 20,000 additional for the same purpose.

Await Rail Orders

Philadelphia, Sept. 10.—Heavy tonnage of rails for the roads under government control hangs over the market. Some distribution of this is expected to be made as soon as the price for standard sections is finally fixed. At the same time the mills have heavy unfilled tonnages on their books, both for government lines in France and on orders left over from the business placed by domestic roads under private management. One eastern mill is rolling 10,000 tons of light rails from shell steel discards. An additional award of 8000 light cars for American railroads in France has been made but the allotments among the builders has not been announced. This is in addition to the 10,000 and 20,000 orders recently placed.

Spike Demand Still Active

Pittsburgh, Sept. 10.—Demand for small spikes is still active and in spite of efforts to speed up production, as requested by the fuel administration, manufacturers still are unable to fill orders and are obliged to apportion their shipments. Nothing new has developed in connection with the placing of orders for standard spikes needed for Pershing's railroads in France. Moderate sized lots of standard spikes are being taken by the railroads but no orders for the roads under direction of the railroad administration have yet been placed. The trade is still waiting word on

the orders from the standard steel rails for the national railroads. Fair demand is noted for light rails.

Wire Needs

For War Purposes Cause Cutting Down of Normal Uses

New York, Sept. 9.—With less steel constantly being allotted for wire rod rolling, operations of wire mills are steadily becoming more restricted. Some mills now are not operating over 40 per cent, while the average probably is not above 50 per cent. The wire situation is steadily changing, mill managements being forced to change their plans in accordance with new requirements and orders for the government. Occasionally orders are distributed for large unexpected requirements that may effect a reduction in the supplies of half a dozen industries. For example, recent war orders will absorb a large amount of wire of the general description used by piano manufacturers, thereby decreasing the supply which had been expected to be available for this trade. Another case is that of the window screen makers. This trade normally consumes about 15,000 tons of wire annually, but a recent allocation calls for about 6000 or 7000 tons of wire of a description not similar to screening wire but which must be drawn from the same blocks. This reduces the amount of wire which will be available for the window screen manufacturers by fully a third. In addition to the orders for 56,000 tons of barbed wire allocated last week, there were two allocations of 20,000 tons each of plain wire for shipment abroad.

Jobbers Fare Poorly

Pittsburgh, Sept. 10.—So large and urgent are orders carrying high priority rating for wire and wire products that there is little surplus for jobbers. In some instances manufacturers are filling about 50 per cent of the jobbers demands but this condition is by no means true of all manufacturers, and where jobbers do succeed in securing some tonnages, it is usually with the company with which they have traded regularly. Continued diversion of steel to plates, rails and shells has caused a further curtailment of production at most wire mills. One maker now is down to only 30 per cent of capacity and only one or two are running at better than 70 per cent. The wire and wire products market is becoming more and more a governmental affair and the situation at present does not hold out much promise for the jobbers.

Sheet Mills Run Better

Valley Plants Able to Operate More Fully—Heavy Gages in Demand—Sheet Bar Supply Very Uncertain

Youngstown, O., Sept. 11.—Practically every sheet mill in the valley is operating full this week which indicates that more sheet bars are available than heretofore. One maker states that during August his sheet mills as a whole operated only about three weeks out of the month due to the shortage of steel. Makers have no way of knowing just what the future holds out for them in the way of production. One maker who depends on an outside supply operates his mills in accordance with the incoming shipments of sheet bars. If the tonnage arriving today is ample to operate seven mills, he plans his rolling schedule for the following day on that basis. There were times when makers of sheets could contract for sheet bars to certain specifications but those times have disappeared. At present they take whatever is shipped to them and make no complaint if the bars are not what they want. Manufacturers of sheets in this and other districts who depend on a bar maker here for their steel supply, may expect light shipments of this semifinished material next week on account of the government's immediate urgent need of shell steel. In order to meet the government's demand, the production of sheet bars will be curtailed. Jobbers coming into this district for sheets get a little tonnage now and then and their requirements are far from being satisfied. In fact consumers as a whole are finding it hard to obtain any grade of sheets here unless they present an A or AA priority. Practically all makers here are shipping their output of sheets on that basis and paying little heed to orders carrying a lower priority.

Heavy Gages in Demand

Philadelphia, Sept. 10.—A brisk demand for heavy sheets continues. This is largely made up of requirements of the Emergency Fleet corporation, powder cases and containers and other work. The mills in this district are operating up to the maximum of about 75 per cent. Their operations are being limited both by supplies and by the concentrated demand for certain sizes and gages.

Sheet Bar Scarcity Still Felt

Pittsburgh, Sept. 10.—Sheet mills are still getting a supply of sheet bars only sufficient for them to operate from 50 to 55 per cent of capacity and as a result of the curtailed output, only those orders carrying the higher priority classifications can be met. The best that jobbers can do is to have their orders booked, for essential business is heavy and pressing and must be met before any attempt can be made at filling the lower priorities.

Sales Limited

In Cast Pipe By Present Conditions —Iron Supply Guarded

Chicago, Sept. 10.—Present conditions in the cast iron pipe market have the effect of limiting closely the sale and delivery of this product. Inasmuch as no pipe can be sold except for essential purposes, cities are unable to obtain supplies for ordinary replacements and extensions. So closely is this matter looked after by manufacturers that a recent sale of more than 2000 tons to a western city has been held up until proper steps have been taken to assure the replacement of pig iron necessary for its manufacture. The proposed issue of $2,000,000 worth of improvement bonds by Akron, O., has been deferred temporarily.

Operations Are Maintained

New York, Sept. 9.—Little change prevails in the eastern cast iron pipe market. Demand continues to come out in sufficient volume to keep foundries running at as full capacity as the labor shortage allows. Virtually all bookings are for direct or indirect government work. No municipal work of any description is in prospect at present.

Essential Requirements Heavy

Pittsburgh, Sept. 10.—Diversion of steel away from the pipe mills for the more vital war requirements has not yet caused a material reduction in pipe mill operations. Essential requirements are so heavy that the manufacturers are not able to give much attention to any but the higher priority classifications. At the same time jobbers are getting larger tonnages of tubular goods than they are of some other steel products.

Washington claims there is a shortage of at least 10,000 workmen in the brass industry, which is curtailing output.

Institute Announces Price Changes

New Schedule on Wire Rope Shows Both Advances and Reductions—Some Revision Made in Steel Casting, Tin Plate and Hoop and Band Prices—Government Price Regulations Emphasized

A NEW schedule of wire rope prices and certain modifications of extras, footnotes, and conditions of sale in hoops and bands, tin plate and railroad steel castings has been announced by the committee on steel and steel products of the American Iron and Steel institute under date of Sept. 12. The new wire rope schedule has been under consideration for several months. It carries with it a number of changes in the discounts off list which work out both as reductions and advances.

Chairman Gary in making the new announcement said:

"The committee on steel and steel products of the American Iron and Steel institute has received from a subcommittee reports based on information received from representative manufacturers of various lines of steel and steel products, and from such reports and other data available the committee has concluded that certain changes and modifications in the maximum prices, differentials, extras, etc., as heretofore recommended by the institute are fair and reasonable, and the committee recommends that revised maximum prices, differentials and extras be adopted to take effect immediately, as follows:

STEEL BANDS, HOOPS AND STRIPS

Under the heading of "Additional Extras" in the recommendation of May 21, 1918, cancel the following:

"For special stamping quality steel, 50c extra," and in place thereof substitute the following:

"For deep stamping or drawing quality steel, 25c extra.

"For extra deep stamping or drawing quality steel, 50c extra."

STEEL CASTINGS

Cancel the paragraph headed "Freight Allowance," including the heading, at the bottom of page 133 of the institute pamphlet of August, 1918 (Iron Trade Review booklet, page 68), and substitute therefor the following:

DELIVERIES

The foregoing schedules cover the castings named therein, in the rough, f.o.b. maker's works, with published rate of freight allowed to freight station of purchasers, other than railroads, located within base territory; and in case of purchases by railroads, with published rate of freight allowed to nearest point on line of such railroad within base territory. On all deliveries made outside of base territory, freight is allowed to boundary line only, excess to be paid by purchaser.

Base territory is defined to be within a line drawn from Boston, Mass., through Schenectady, Rochester and Niagara Falls, N. Y., Detroit, Mich., Duluth, Minn., St. Louis, Mo., Cincinnati, O., Washington, D. C., Cape May, N. J., and all other Atlantic ocean terminal points between Cape May and Boston.

Cancel Note 1 on page 134, and Note 1 on page 135 of the institute pamphlet of August, 1918 (Iron Trade Review booklet, pages 68 and 69), and in place of each substitute the following:

"Note 1—For f.o.b. and delivery points see page 138."

Cancel the heading on page 136 (Iron Trade Review booklet, page 69) reading:

"List prices delivered to car and locomotive builders in base territory, carload and less carload shipments, for estimating purposes," and in place thereof substitute the following:

"List prices to car and locomotive builders for estimating purposes."

Cancel Note 1 on page 136, and in place thereof substitute the following:

"Note 1—For f.o.b. and delivery points, see page 138" (Iron Trade Review booklet, page 69).

Cancel paragraph on page 138 (Iron Trade Review booklet, page 70), reading:

"Delivery f.o.b. cars works of manufacturer with freight allowed at the carload rate to point on railroad line nearest manufacturer's ioupler foundry, or to any car or locomotive building plant located north of the Ohio, east of the Mississippi and west of the Hudson rivers, including Bettendorf, Iowa, St. Louis, and St. Charles, Mo., Huntington, W. Va., and Curtis Bay, Md," and substitute therefor the following:

F.O.B. AND DELIVERY POINTS SIDE FRAMES, BOLSTERS AND COUPLER SIDE FRAMES, BOLSTERS AND COUPLERS

The above named prices on side frames, bolsters and couplers are f.o.b. cars maker's works, with freight allowed at carload rate as follows: In the case of purchase by railroads, to the nearest point on such railroad, located in the states of New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Kentucky, Ohio, Indiana, Illinois, Michigan (southern peninsula only) and the city of St. Louis, Mo.; in the case of purchase by any car or locomotive builder, to the plant of purchaser, if located in either of the above mentioned states, or in St. Louis, Mo., or in St. Charles, Mo., or in Bettendorf, Iowa; and in the case of the materials being purchased for export, to any export point in the above mentioned states.

For deliveries in the United States outside of the above mentioned territory, add to the prices shown above, freight at carload rate from Columbus, O., to the nearest point on railroad, or to the plant of any car or locomotive builder, or to any export point, as the case may be, less 20c per 100 pounds. The resulting price will be the price f.o.b. cars maker's works for said delivery; from which price deduction will be allowed for freight at carload rate, to nearest point on railroad, or to plant of car or locomotive builder, or to point of export, as the case may be.

TIN PLATE

Change the extra for "Tin lined cases" on page 85 of the institute pamphlet of August, 1918 (Iron Trade Review booklet, page 38), from 30c base to 40c base, and make the "minimum charge in any case" 40c per package instead of 30c per package.

Change the extras for "Enameling stock" and "Full finished black plate" on page 36 of the institute pamphlet of August, 1918 (Iron Trade Review booklet, page 39), from 25c per 100 pounds to 40c per 100 pounds.

WIRE ROPE

A new schedule on standard commercial wire rope has been issued. The old schedule, which appears on pages 48 to 51 of The Iron Trade Review price booklet, has been eliminated, and the new list is resubstituted therefor. The new schedule has this introduction: "Discounts or additions applying to standard list in various territories (but as stated below), recommended by the committee of steel and steel products of the American Iron and Steel institute, Sept. 10, 1918, to be effective on and after Oct. 28, 1918." In the special prices for odd rope where a greater strength than plow steel is asked for the prices shall be based "on the list for special steel rope" instead of upon the list for "blue center steel rope" as in the previous schedule.

The committee calls particular attention of the steel industry to the following announcement under date of Aug. 29, 1918, of the war industries board, published in the Official Bulletin, issue of Aug. 30, 1918, defining the application of the maximum prices established by the United States government.

"At a meeting of the price-fixing committee, held Aug. 27, the following resolution was passed:

"Be it resolved, that where prices are stated to be fixed for the United States government, the governments associated with it in this war, and the public (or primary civilian sales) the said prices are hereby declared to extend to the government and civilians of the United States (including civilians of its territories and insular possessions) and to the following governments, i.e., Great Britain, France, Italy, Belgium, and Japan.

"And be it further resolved, that these prices shall not extend to these maximum prices shall not extend to purchases made by the civilians of the latter mentioned allied nations nor to the governments or civilians of nations other than those above mentioned."

A rivetless steel vessel has recently been launched in England. Plates are welded instead of being riveted. To adopt this method in this country would save 20 to 25 per cent in time and material, it is claimed. The United States shipping board is in close touch with the experiment and is ready to place orders for a number of 10,000-ton welded ships.

Safety Meeting

At St. Louis Will Take Up Many Iron and Steel Problems

The annual meeting of the National Safety Council will be held in St. Louis during the week of Sept. 16. An elaborate program has been prepared. The members of the council feel that the problems of industrial safety are more important today than ever before owing to the loss of manpower resulting from the war. Special sessions dealing with the safety problems of the foundry and iron and steel industries will be held from Tuesday to Friday, Sept. 17-20. The detailed program for these sessions is as follows:

Foundry Session

TUESDAY, SEPT. 17, 9:30 A. M.

Chairman, Earl B. Morgan, Boston.

Foundry Management from Standpoint of Accident Prevention, by G. A. Hart, National Malleable Castings Co.

Lunch Rooms, by H. H. Haylett, Benjamin Electric Co., Chicago.

Wash and Locker Rooms, by H. L. Krum, International Harvester Co., Chicago.

Topical Discussion:

Eye Protection, by Buell W. Nutt, Strong, Kennard & Nutt Co., Cleveland.

Leggings, by William H. Horstman, Philadelphia.

Shoes, by B. C. Christy, International Harvester Co.

Iron and Steel Session

WEDNESDAY, SEPT. 18, 9:30 A. M.

What the United States is Doing in Safety Engineering, by Chester E. Rausch, American Museum of Safety, New York.

Safety in the Steel Mill of Today, by Major K. M. Burr, Emergency Fleet corporation, Philadelphia.

Placing Women in Industry, by S. W. Ashe, General Electric Co., Schenectady, N. Y.

THURSDAY, SEPT. 19, 9:30 A. M.

Plant Railroad Hazards, by C. H. Baltzell, St. Louis & San Francisco railroad, Chicago.

Labor Turnover and Accidents, by A. H. Young, International Harvester Co., Chicago.

Review of Electrical Hazards, by W. P. Strickland, New York.

Industrial Fire Protection, by William Guerin, Pyrene Fire Extinguisher Co., New York.

FRIDAY, SEPT. 20, 9:30 A. M.

Review of Educational Methods, by F. H. Elam, American Steel Foundries, Chicago.

Round Table Conferences:

Returning Injured Men to Employment, by F. F. Mackay, Timken Roller Bearing Co., Canton, O.

Does Disciplining Pay in Safety, by Grover G. Kingsley, Halcomb Steel Co., Syracuse, N. Y.

Iron and Steel Industrial Safety Work of the Future, by J. C. Smith, Inland Steel Co., Chicago.

Issues Rules for Granting Export Licenses

Washington, Sept. 10.—Regulations to govern the application for an issuance of export licenses after Sept. 20 have been issued by the war trade board. The board will grant such licenses only to corporations organized in the United States; residents of the United States; foreign partnerships with a member resident in the United States; foreign corporations maintaining an established branch in the United States; any foreign government acting through any member of its embassy or legation accredited to this country; the traffic executive of Great Britain, France, Italy and the consul from Belgium; and any official, firm or corporation appointed by any department or agency of the United States government to act in its behalf. The regulations also provide that only such applications will be considered as have been signed by an officer of the company or corporation or an authorized representative of the party making application.

August Unfilled Tonnage Shows Further Decline

Unfilled tonnage on the books of the United States Steel Corp., as of Aug. 31, was 8,759,042, whereas on July 31, it stood at 8,883,801. This represents a further falling off of 124,759 tons. On July 31, the total had dropped 35,065 tons from the preceding month. Unfilled tonnages from month to month, since April 30, 1916, are shown in the following table:

Date	Total	Change, tonnage	Change, per cent
Aug. 31, 1918..	8,759,042	124,759—	0.14—
July 31, 1918..	8,883,801	35,065—	.39—
June 30, 1918..	8,918,866	581,243+	6.90+
May 31, 1918..	8,337,623	404,259—	4.60—
Apr. 30, 1918..	8,741,882	314,522—	3.47—
Mar. 31, 1918..	9,009,675	232,049—	2.49—
Feb. 28, 1918..	9,288,453	189,400—	1.99—
Jan. 31, 1918..	9,477,853	96,135+	1.02+
Dec. 31, 1917..	9,381,718	484,612+	5.44+
Nov. 30, 1917..	8,897,106	112,569—	1.24—
Oct. 31, 1917..	9,009,675	823,802—	8.37—
Sep. 30, 1917..	9,833,477	573,572—	5.51—
Aug. 31, 1917..	10,407,049	433,115—	4.16—
July 31, 1917..	10,844,164	539,123—	4.74—
June 30, 1917..	11,383,287	503,304—	4.24—
May 31, 1917..	11,886,591	296,492—	2.43—
Apr. 30, 1917..	12,183,083	471,439+	4.02+
Mar. 31, 1917..	11,711,644	134,947+	1.16+
Feb. 28, 1917..	11,576,697	102,643+	0.90+
Jan. 31, 1917..	11,474,054	73,232—	0.64—
Dec. 31, 1916..	11,547,286	488,744+	4.43+
Nov. 30, 1916..	11,058,542	1,043,282+	10.41+
Oct. 31, 1916..	10,015,260	492,676+	5.18+
Sep. 30, 1916..	9,522,584	137,133—	1.42—
Aug. 31, 1916..	9,660,357	66,765+	.69+
July 31, 1916..	9,593,592	46,866—	0.48—
June 30, 1916..	9,640,458	297,340—	3.09—
May 31, 1916..	9,937,798	108,247+	1.11+
Apr. 30, 1916..	9,829,551	498,550+	5.34+

With a complement of 306 coke ovens, the Youngstown Sheet & Tube Co., Youngstown, O., is self-contained as to the coke supply for its six blast furnaces, insofar as coal is available for the ovens. This total of 306 was reached recently, when the company's sixth battery of coke ovens was fired. With all of its coke ovens in operation, improved furnace operations are anticipated.

Chemical Society

Discusses War Problems at Cleveland Meeting—Tremendous Growth

Cleveland, Sept. 11.—War problems occupy a prominent place on the program of the fifty-sixth annual meeting of the American Chemical society which is now being held in Cleveland. Headquarters have been established at the Hotel Statler. The meeting opened on Monday, Sept. 9, and will close Friday, Sept. 13. Among the papers dealing with the relation of the chemical industry to the war, presented at the general session on Tuesday, were the following: "The Work of the Chemical Section of the War Industries Board," by Charles M. McDowell, committee on chemicals, war industries board, Washington, "The American Chemists' Place in Warfare," by Charles L. Parsons, secretary, American Chemical society; "War Disturbances and Peace Adjustments in the Chemical Industries," by Grinnell Jones, chemist, United States tariff commission; "Chemical Warfare Research," by Lieut. Col. Wilder D. Bancroft, of the chemical warfare service; and "The Place of the University in Chemical War Work," by Edward W. Washington, of the National Research council. A special session on the chemistry of dyestuffs also was held on Tuesday. Wednesday was devoted to sectional meetings including a session on industrial and engineering chemistry at which H. S. Miner was chairman. Among the papers presented at this session were the following: "The Deoxidation of Steel by Ferromanganese," by Alexander L. Field; "The Potash Situation," by A. W. Stockett; and "The Extraction of Potash from Cement Mil land Blast Furnace Dust," by William H. Ross.

At the meeting on Tuesday it was pointed out that the output of chemicals in the United States has grown from 6,000,000 tons worth $2,500,000 in 1914, to 46,000,000 tons valued at $57,000,000 in 1917. The production of sulphuric acid in this country is now twice as great as it was before the war. New methods for manufacturing synthetic ammonia and nitric acid, superior to the German processes of Haber and Ostwald, have been developed. The production of benzol in 1917 amounted to 40,200,000 gallons, with a corresponding production of toluol of 10,200,000 gallons. Before the war there were no synthetic phenol plants in this country. In 1917 fifteen plants were operating, their output of 64,146,499 pounds being valued at $23,715,805.

Semisteel Shells

To the Number of 33,000,000 Are Being Sought by Government

Pittsburgh, Sept. 11.—(By Wire)—Requisitions for 33,000,000 semisteel shells have been made by the government. Bids were asked on 24,000,000 6 and 8-inch shells and on 9,000,000 4.7-inch shells. About 300 foundry and machine shop owners gathered at the chamber of commerce today at the call of R. M. Garland, business manager of the Pittsburgh region of the war resources committee and it was apparent from the questions asked, that the companies in this district will seek some of the business. The meeting was addressed by Lieut. E. A. Carpenter of the ordnance department who told how the work might be divided to secure speed. Dr. Sargent of the chemical division of the ordnance department said that specifications had not yet been worked out. Capt. Huxley, ordnance department, Washington, told of the various tests that would be required.

Ingot Output

In August Shows Slight Decline From Previous Month

Ingot production in August fell slightly below the July figure, according to the reports of the American Iron and Steel institute. Twenty-nine companies which in 1916 produced 88.14 per cent of the total steel ingot output, produced 3,083,563 gross tons in August against 3,113,635 gross tons in July, and 3,123,217 gross tons in August, 1917.

The following figures showing the production by these 29 companies during the past 15 months, indicate that the level of output set in March is being maintained:

Months 1917	Open hearth Gross tons	Bessemer Gross tons	All other Gross tons	Total Gross tons
June	2,265,772	809,552	8,605	3,083,929
July	2,152,479	777,171	9,465	2,939,115
August	2,251,013	863,873	8,331	3,123,217
Sept.	2,195,556	770,064	6,639	2,972,259
Oct.	2,475,754	870,494	5,687	3,351,935
Nov.	2,384,218	772,489	9,550	3,166,257
Dec.	2,195,832	524,084	13,806	2,733,722
1918				
Jan.	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,858	3,287,233
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
Aug.	2,299,060	766,860	17,643	3,083,563

Ohio-Kentucky Iron Producers Form Association

Operators of blast furnaces and by-product coke oven plants in the southern half of Ohio and in the Ashland district of Kentucky, are forming an association which is designed to increase the production of pig iron. A committee appointed at the first preliminary meeting held in Ashland, Ky., on Aug. 23 to draw up proposed by-laws will report at a meeting to be held in Portsmouth, O., during the third week of September. Officers will be elected at that time.

The furnaces in the territory include those in the Columbus, Hamilton, Hanging Rock, Ironton, Jackson, Portsmouth, Wellston and Zanesville districts of Ohio and the Ashland furnaces. A number of by-product coke plants also are located in this district. Men in charge of operations at these plants especially the managers, superintendents, chemists and assistant are eligible to memberhip. R. H. Sweetser, works manager of the American Rolling Mill Co., Columbus, O., is temporary chairman, and J. H. Briscoe, resident manager of Easton, Rhodes & Co., Ashland, Ky., is temporary secretary.

Operations of the Steel Corporation are increasing. According to Judge Gary, the blast furnaces now are running at 94 per cent of capacity against 92 per cent for the previous week.

The Non-Ferrous Metals

Copper Lead Spelter Tin

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
Sept. 4	26.00	.....	8.05	9.12½	33.00	14.00
Sept. 5	26.00	.....	8.05	9.15	33.00	13.87½
Sept. 6	26.00	.....	8.05	9.20	33.00	13.75
Sept. 9	26.00	.....	8.05	9.20	33.00	13.62½
Sept. 10	26.00	.....	8.05	9.25	33.00	13.75

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 27.30c.
†No spot Straits tin offering.
‡Price agreed to by leading interest and independents.
§Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, Sept. 10.—The lead producers' committee for war service has assumed further control of the lead industry. The committee will allot lead for all requirements, including United States and allied governments, and domestic consumers. The committee has issued further rulings with regard to retail lots of lead. Dealers may charge ¾c over the wholesale price for less than ton lots of lead, and ½c for ton lots. Dealers are not allowed to sell any carload lots. The prices of lead as fixed by agreement among the lead producers, remain 8.05c New York and 7.75c St. Louis. The lead situation remains extremely tight.

The spelter market has been steady in the past week without any particular developments until today, when report of government buying sent prices up. Speculators have been fairly active in endeavoring to get the metal, but producers remain rather chary about selling to any except consumers. Prime western prices are 9.25c to 9.30c for prompt September shipment, St. Louis basis, and 9.12½c to 9.25c for fourth quarter shipment. Export business in sheet zinc is rather brisk. Sixty per cent of the production of sheet zinc is being used by the government. The maximum base price of sheet zinc remains 15c and of grade A spelter, 12c.

It was reported at the close of last week that the interallied committee in session at London reached an agreement to control prices and distribution of tin over the world. American consumers have been represented at these conferences by George Armsby of the war industries board and John Hughes, chairman of the subcommittee on tin of the American Iron and Steel institute.

The foreign tin markets have been marked down regularly £2 a day for the past month. This is applied both to quotations in London and Singapore, c. i. f. London. In sympathy with this decline prices at New York also have been reduced. Spot Banca tin today was offered at 77c to 78c against 83c a week ago. Spot tin of 99 per cent quality is offered at about 77.50c New York. No business is being done in Banca or Chinese No. 1 tin for future shipment, owing to the extremely high prices still prevailing in Batavia and Hongkong. Expectation of concerted action by the allied governments respecting tin, has kept consumers generally from showing active interest in the tin market.

The copper situation shows little change from week to week as machinery of distribution runs along smoothly, under the direction of the copper producers' committee. Prices are fixed at 26c for carload lots and 27.30c for less than carload lots to Dec. 31.

Aluminum prices recently were fixed to March 1 at 33c for 98 to 99 per cent ingot, with the usual discounts and extras. Recent negotiations closed with the Canadian government relative to power supply will increase American production.

Until today the government has shown no general interest in the antimony market in the past several weeks, and there has been little activity among consumers. Consequently prices softened perceptibly. Spot metal is offered at 13.75c and might have been bought at 13.62½c duty paid, New York, but now is 13.75c. No business is being done in futures owing to the fact that shipment metal is held at considerably higher prices.

Correcting Air Volume for Blowing

The Adjustment of Air Supply to a Blast Furnace is Governed Accurately by a New Constant-Volume Corrector, Independent of Temperature, Barometer, and Humidity

BY L. C. LOEWENSTEIN

THE blast furnace is primarily an apparatus for producing pig iron. The materials discharged from the furnace are pig iron and slag, which are tapped from the bottom or crucible of the furnace, and the gases and dust, which pass out of the top of the furnace. The iron ore in a blast furnace is deoxidized or reduced, for which purpose the furnace is charged with sufficient carbonaceous fuel to do two things, namely: To abstract all the oxygen from the reducible metallic oxides and to furnish enough heat at high enough temperature to melt down to superheated liquids the pig iron and slag that are formed. The fuel must supply the reducing energy and the melting-down or smelting requirements. The first is effected by acting upon the metallic oxides at a red to a white heat and abstracting their oxygen; the second by being burned at the foot of the furnace by the hot-air blast, and there generating the heat necessary for the smelting down of the materials already reduced.

Blast Furnace is a Gas Producer

In a secondary way the blast furnace may be regarded as a huge gas producer, run by hot forced blast, in which the incombustible portions of the contents are melted down (with a little unburnt carbon) to liquid metal and slag and are run out beneath, while the gaseous products pass upward through 50 to 100 feet of burden and escape above. The escaping gases are primarily of the composition of producer gas, with some of its carbonous oxide changed to CO_2 by the oxygen abstracted from the burden; with some CO_2 added from the decomposition of the carbonates of the charge; and with the usual increment of moisture from the charge and volatile matter from the distillation of the fuel. Hence, the blast furnace is a huge gas producer, giving a rather inferior quality of combustible gas in large quantities, while reducing to metal and slag the burden of iron ore and flux (limestone) which is put in with the fuel. The unoxidized and combustible ingredients of the escaping gas represent a large part, and often the largest part of the total calorific power of the fuel.

If the charging of a furnace is uniform, it is quite essential to have the amount of air supplied to the furnace also uniform in quantity. The air pressure required for forcing the air through the furnace varies with the condition of the burden or charge. If the particles of ore, fuel, and limestone are large, that is, the spaces between these particles ample, there is a freer passage for the air than if the particles of ore, fuel, and limestone are small and closely packed. Under certain conditions the furnace may require a pressure of, say, 10 to 15 pounds to force a certain quantity of air through it, while under other conditions, when the material in the furnace is tightly packed, a much higher pressure, sometimes as high as 25 to 30 pounds, is required to force through the same amount of air.

It is therefore necessary that the air compressor shall adapt itself automatically to a predetermined *weight* of air, corresponding to the charge in the furnace, and independent of the resistance encountered up to a certain maximum. Usually this limiting air pressure is 30 pounds, as this is the maximum pressure the stack itself will withstand with safety.

The expression *weight of air* is used, because the blast furnace requires a definite weight of oxygen to combine with the carbon in the coke charged to the furnace. In general practice we refer to this definite weight of air or oxygen as a "constant volume of air." This volume must have reference to specific conditions of temperature, barometer and humidity, because any variation of these conditions changes the weight of oxygen contained in a given volume. The standard conditions most commonly referred to are dry air at 60 degrees Fahr. temperature and 30 inches barometer. Air under these specified conditions contains, of course, a definite weight of oxygen per cubic foot.

Reciprocating Engines and Blowers

Previous to the advent of the centrifugal compressor, reciprocating compressors were chiefly used for blast-furnace work. The governor of the compressor driver was set to maintain a speed corresponding to the desired

A paper presented at a recent meeting of the American Society of Mechanical Engineers. Mr. Loewenstein is engineer for the General Electric Co., West Lynn, Mass.

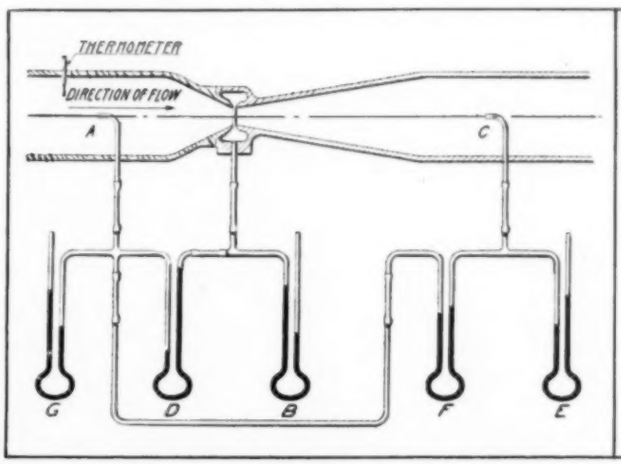


FIG. 1—VENTURI METER, SHOWING ARRANGEMENT OF U-TUBES

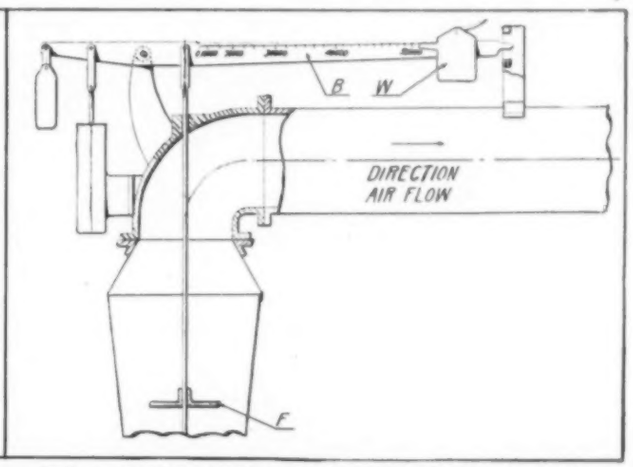


FIG. 2—IMPACT FLOW AIR METER, SHOWING WEIGHT BEAM ARRANGEMENT

quantity of air, the general idea being that each stroke of the compressor represented a practically constant quantity of atmospheric air regardless of the discharge pressure.

The revolutions per minute of the reciprocating compressor was a poor guide as to the weight of air supplied, so it was left to the judgment of the blast-furnace operator as to whether or not the furnace was receiving the proper amount of air. If in his opinion the furnace was receiving too little air, that is, if it was underblown due to the charge in the furnace offering more resistance to air flow than previously, he would call for a higher speed of the reciprocating compressor. Speeding up the driver would then furnish a somewhat greater quantity of air at the higher pressure. If, however, the blast furnace was overblown, the reciprocating compressor was slowed down, and the quantity of air furnished was reduced. This method of operating necessitated a decided change of condition in the furnace before the furnace operator knew that the air supply to the furnace was not correct, and in many cases the furnace was in poor condition before the operator changed the air supply.

With the introduction of greater refinements in determining the quantities and the chemical composition of the ore, fuel and flux entering each charge in the blast furnace, the uncertainty in the quantity of air supplied began to stand out as the weakest link in the chain. There was not only the need for a reliable method for measuring the quantity of air, but engineers were asking for apparatus which, while metering the air, would also automatically maintain any desired quantity, regardless of the furnace conditions.

The commercial methods for measuring air most commonly employed are: The receiver method, the orifice method, the Pitot tube, the venturi meter, and the impact-float method. Of these the first two methods waste the air they pass, and are therefore suitable only for temporary testing purposes. The other methods allow the air to pass to destination, and may therefore be left continuously in the system.

In the receiver method the compressed air is passed into a closed system consisting of a tank and piping of known dimensions and full originally of air of atmospheric pressure and temperature, which conditions are taken as standard. After the compressed air has been flowing into the system for a sufficient period, say, half an hour or an hour, the pressure and the temperature are again observed.

In the orifice method the compressed air is discharged into the atmosphere through an orifice of known area and known velocity coefficient. The initial temperature is measured by means of a bare thermometer inserted through the wall of pipe immediately preceding the orifice without well or casing of any kind. The pressures may be observed independently, or, preferably, the pressure drop may be observed by means of an impact tube. Next to the receiver method, the orifice method is the most reliable method for measuring air, and it is generally recommended as the standard for the calibration of other air-measuring methods. A uniform rate of flow, however, is presupposed, as a pulsating flow, such as comes from reciprocating or positive pressure compressors, cannot be measured reliably by any method which depends on a density times velocity squared observation unless the discharge piping is of a length sufficient to dampen out all pulsations.

The venturi meter shown in Fig. 1 consists of a direct and a reversed nozzle, making a common throat. In general, two U-tubes B and D, or the equivalent, are necessary, one to give the static pressure B in the throat and the other to give the pressure drop D from the main pipe, or high-pressure region, to the throat. It will be noticed that the impact tube A points up stream, so as to include whatever velocity head may exist in the main pipe. After the air passes the throat, the pressure rises again to nearly its original value. This may be demonstrated by the use of impact tube C, pointing upstream.

U-tube F communicating with both impact tubes A and C will give directly the pressure loss caused by the insertion of the venturi meter into the system.

The direct nozzle should be short and well rounded, while the reversed nozzle should be well tapered with a half angle of about 4 degrees. The inside of the meter must be smoothly finished, and particular care must be taken at the entrance of the U-tube into the throat of the meter to avoid all burrs and roughness. Also the impact tube in the main pipe should be small to avoid any eddies and disturbances due to the introduction of the impact tube. The quantity of air may be computed from

$$Q = (423fa/\sqrt{T_1})\sqrt{[P_2(P_1 - P_2) - 0.0665(P_1 - P_2)^2]} \quad [1]$$

where

Q = cubic feet of standard air (14.70 barometer and 60 degrees Fahr.) per minute.
T_1 = absolute temperature in main pipe in degrees Fahr.
f = velocity coefficient of throat, usually between 0.95 and 0.99.
a = area of throat in square inches.
P_1 = absolute initial (high) pressure in inches of mercury.
P_2 = absolute pressure in throat in inches of mercury.
$P_1 - P_2$ = pressure drop.

In designing a venturi meter for a particular case, the area a is so chosen

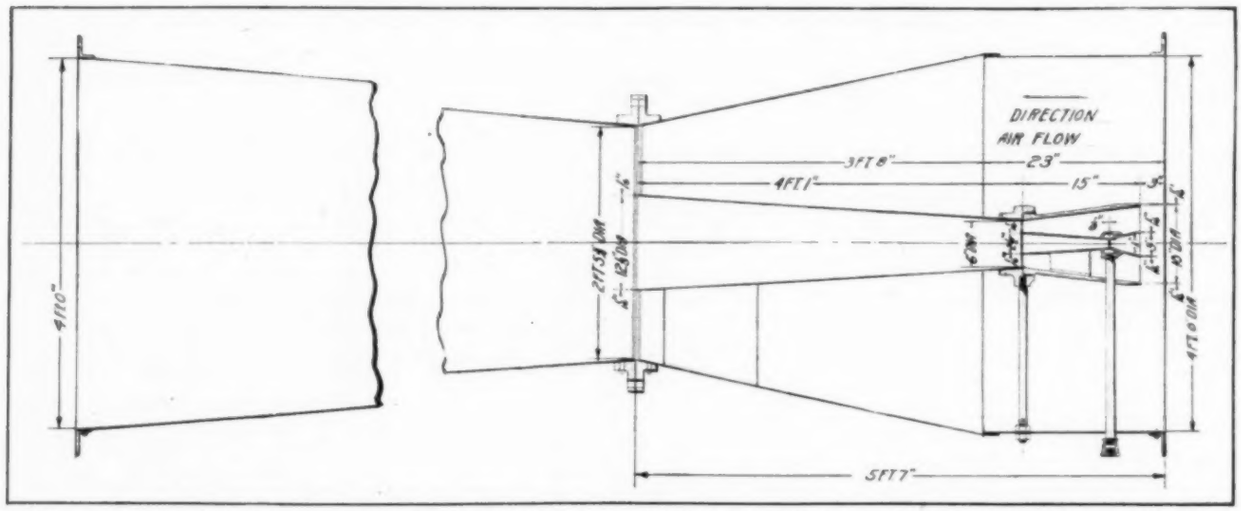


FIG. 3—TRIPLE VENTURI METER USED FOR SECURING A REASONABLE DROP OF PRESSURE WITHOUT EXCESSIVE POWER LOSS

that the value of $P_1 - P_2$ for the quantity of air most commonly used should be large enough to be read conveniently and with reasonable accuracy and yet not so large as to cause an excessive pressure drop and power loss in the meter.

It is preferable to measure the air before it is compressed, so that P_1 and T_1 are the atmospheric pressure and temperature, respectively. A single U-tube like U-tube B in Fig. 1 is then sufficient. The actual pressure P_1 must be obtained from the existing barometer and then P_2 can be computed from the reading $P_1 - P_2$ on the U-tube.

The U-tube can also be calibrated in cubic feet of air per minute instead of indicating only inches of mercury pressure. When so calibrated it can only refer to some standard or average condition of air, and any change in temperature, barometer or humidity will affect the correct reading on such a calibrated scale.

The Impact-Float Method

The impact-float method illustrated in Fig. 2 consists in allowing the air to be metered to impinge on a float F, usually in the form of a disk, suspended vertically in a cone. The air enters the small end of the cone, and its velocity is steadily reduced as it passes up toward the larger end of the cone. The force tending to lift the float, and whatever is attached to it, against gravity consists partly of the direct impact of a part of the air against the float, and partly of the pressure drop

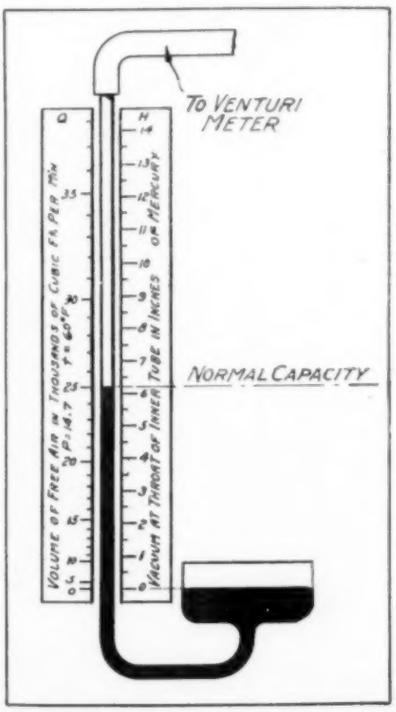

TO VENTURI METER
NORMAL CAPACITY
VOLUME OF FREE AIR IN THOUSANDS OF CUBIC FT. PER MIN.
TUBE IN INCHES OF MERCURY
VACUUM AT THROAT OF INNER

FIG. 5—U-TUBE AND QUANTITY SCALE FOR VENTURI METER

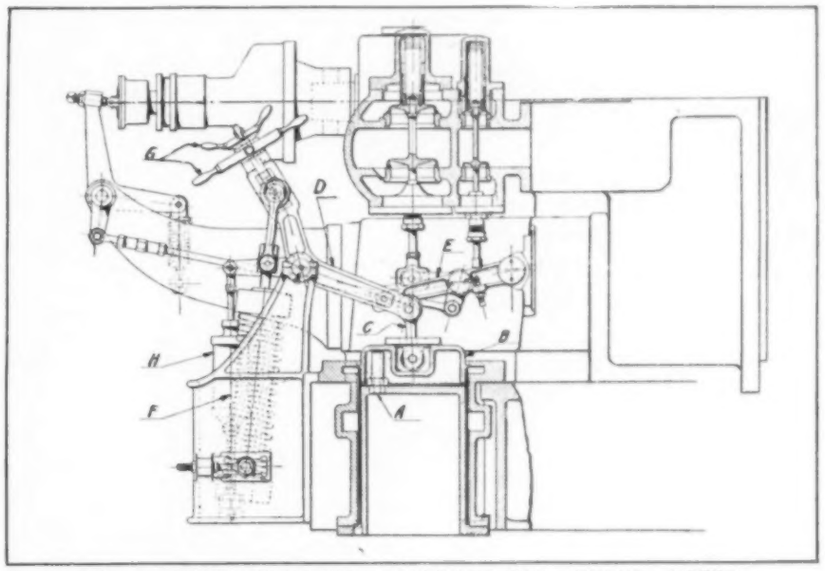


FIG. 4—CONSTANT VOLUME GOVERNOR FOR VENTURI METER

caused by the passage of the air through the annulus between the float and the cone in a sort of *vena contracta*. As the float rises in the cone, this force is reduced by the lowered velocity of the air, so that the position of the float in the cone is a function of the quantity of air passing through the cone.

It is desirable, for reasons which will appear later in connection with air regulation, to confine the position of the float within narrow limits, regardless of the quantity of air. This is accomplished as shown in Fig. 2 by connecting the float to a horizontal lever or beam B, the force on the float being balanced by a sliding weight W, which can be moved to any part of the beam. The beam is so graduated that the position of the sliding weight gives directly the volume of the air entering the cone.

The impact on the float or the momentum of the air is evidently mV, where m is the mass of air impinging on the float per second and V is its velocity. Since for a constant cross-section M is proportional to YV, where Y is density of the air, the impact on the float is proportional to YV^2 or to m^2/Y. Similarly, the pressure drop through the annulus around the float is $YV^2/2g$, where V is now the velocity in the annulus, and is therefore also proportional to m^2/Y.

When the air flows through the annulus between the float and cone a *vena contracta* obtains whose area varies with each volume of air flowing. On account of this, formulæ for the float force or reaction based on purely mathematical deductions require modification based on experimental results. The slope of the cone and the ratio of float diameter to cone diameter and also the average velocity of the air through the cone influence the value of this float force. For long cones having a slope of about one inch in five inches and with floats having areas between 50 per cent and 95 per cent of the annulus area and using average velocities through the cone under 100 feet per second, the following formula found experimentally will hold:

$$F = 9 \times 10^{-4} Q^2 Y \sqrt{(A/a^3)} \qquad [2]$$

in which

F = total force of float in pounds.
Q = cubic feet of air per minute.
Y = density of the air in pounds per cubic foot.
A = float area in square feet.
a = annulus area in square feet.

The upward moment of the force F about the fulcrum of the beam (Fig. 2) is counterbalanced partly by the downward moment of the weight of the float and partly by the moment of the sliding weight, which is downward, but may be upward for small volumes of air. In any case, however, the system may be reduced to one having a weightless float and beam, so that the upward moment of the float force F is balanced by the downward moment of the sliding weight W. Since both the weight W and the lever arm of F are fixed, the lever arm of W must be always proportional to the force F, or to M^2/Y, in which M is Q referred to standard conditions of barometer, temperature and humidity, and therefore represents a definite weight of air.

Must Have Quadratic Scale

In other words, the beam must have a quadratic scale; that is, the longitudinal distance of the sliding weight from the zero on the beam is four times as great for 20,000 cubic feet and nine times as great for 30,000 cubic feet as it is for 10,000 cubic feet. The graduations on the beam are made correct for the average atmospheric con-

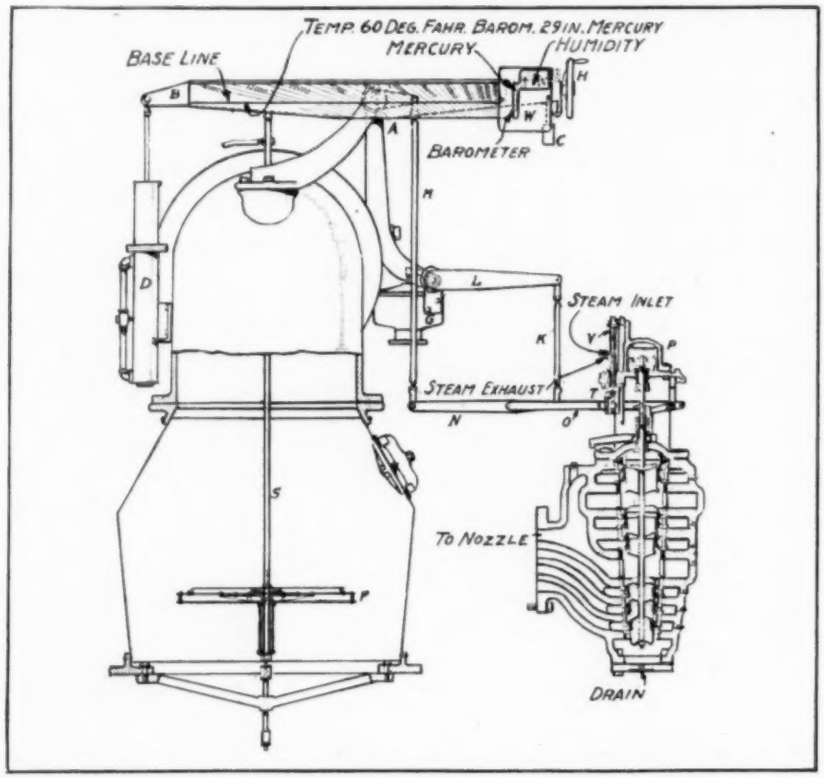


FIG. 6—VOLUME CORRECTOR SHOWN MOUNTED ON THE BEAM OF A CONSTANT-VOLUME GOVERNOR

ditions of the air at the place where the instrument is to be used.

In metering the air all that is necessary after the beam is calibrated is to move the sliding weight *W* along the beam until the beam is level, as in the case of the beam on a pair of beam scales. The pointer on the weight *W* then indicates the amount of air flowing.

Constant-Volume Governing

Of the above-mentioned methods of measuring air in general, only the last two, the venturi meter and the impact float, are commercially used for regulating the supply of air to blast furnaces. With the advent of the centrifugal compressor a blowing apparatus became available which could be nicely regulated in respect to holding any constant volume of air supply to the furnace. The centrifugal compressor delivers a steady stream of air without pulsations, and the pressure delivered by such a unit varies closely with the square of its speed. Hence, any volume regulation of air need only influence the speed of the driver of the centrifugal compressor. Up to a very short time ago all volume regulation for centrifugal compressors was based upon a calibrated scale for some standard condition of air, usually assumed as dry air at the average temperature and barometer existing at the location of the set. We again emphasize the fact that constant-volume governing is referred to, whereas the object desired is to introduce a constant *weight* of oxygen into the furnace.

The governing of a centrifugal compressor, in order to hold constant volume, requires the use of a meter for measuring the volume of air flow. The necessary qualifications of such a meter, taking into consideration the large quantities of air used in blast-furnace operation, are: That it must not waste any of the air it meters; that the power consumed in the metering and governing processes must be small, which makes it necessary that the friction losses of air flow through the meter shall be small; that the governor must be sensitive, so that a small change in the quantity of air supplied will be sufficient to actuate the governor.

An ordinary venturi meter in which the entire quantity of air flowing must be drawn through a sufficiently small throat to give a suitable drop of pressure would involve considerable power loss. To reduce this power loss a multiple venturi has been devised, consisting of a number of concentric meters. Fig. 3 shows a multiple venturi, in which a very small part of the total air flow passes through the small or inner venturi. At the throat of this small venturi the largest pressure drop is obained. A larger quantity of air flows around the inner venturi and through the second venturi, but the bulk of the air flow is around the second and through the third or outer venturi.

Consider a flow of 45,000 cubic feet of standard air per minute through the triple venturi shown in Fig. 3, the air flowing from right to left as indicated. The air at inlet to the venturi is assumed to be at practically atmospheric pressure and temperature. By the use of equation [1] and by assuming a probable velocity coefficient $f = 0.95$ for the inner venturi and $f = 0.85$ for the two outer venturis, we can show that the following conditions obtain. Through the inner venturi 175.8 cubic feet of standard air flows. The pressure at the throat is 22.65 inches of mercury, representing a drop of pressure of 7.28 inches of mercury. About 1777 cubic feet of standard air per minute flows through the middle venturi. The drop of pressure from atmosphere (29.93 inches of mercury) to the throat of this venturi is 0.73 inch of mercury. All the remaining air (43,047 cubic feet) passes through the outer or third venturi, and the drop of pressure from atmosphere to the throat of this venturi is 0.69 inch of mercury.

Measuring Power Loss

The loss of power in metering the air through this triple venturi, when passing 45,000 cubic feet of standard air per minute, can be determined from the loss of pressure between that existing at the entrance to each venturi and the pressure existing at the exit or discharge end of each venturi, taking into account the volume of standard air passing through each. This gives a loss of power of 0.18 horsepower for the smaller or inner venturi, 1.06 horsepower for the middle venturi and 31.38 horsepower for the outer or largest venturi, making a total power loss through the entire triple venturi of 32.62 horsepower.

The largest drop of pressure in this triple venturi meter occurs in the throat of the inner or smallest venturi. With a flow of 45,000 cubic feet of standard air per minute, the calculated drop is 7.28 inches of mercury (3.57 pounds per square inch) pressure. With air entering the meter from atmosphere, the throat pressure will be negative, establishing a suction. With varying flow of air through the venturi, the suction at the throat of the inner venturi will also vary; and this varying suction can be used for governing the driver of a centrifugal compressor so as to hold a definite *constant volume* of air flow per minute.

Fig. 4 shows in a diagrammatical manner a means for accomplishing this. The pipe leading from the throat of the inner venturi meter is connected to part *A* representing a mercury-sealed pressure bell, or mercury pot. Suction pressure at the venturi throat is established in the space *B* between the stationary part of the pot and the upper and movable bell. Variations of pres-

sure in *B* cause this bell to move up or down. The suction pressure is sealed from atmosphere by a column of mercury surrounding the long sheet-steel skirt or extension of the bell. There is sufficient clearance space between this sheet-steel skirt and the inner and outer shell surrounding it to prevent any frictional contact. The movement of the bell in the mercury pot is transmitted through the links *C*, *D*, and *E* to the steam-valve control to the turbine, thereby opening and closing the number of valves admitting steam to the turbine. An adjustable spring *F* can be set so as to counterbalance the pull of the bell for any desired volume of air. Handwheels *G* are used for setting the spring tension, as can be readily understood from the figure. Dashpot *H* dampens out the oscillations of this gear.

The method of setting for regulation is as follows: Having determined exactly the number of cubic feet of standard air desired per minute, the operator turns the handwheel *G* and observes the height of the registering mercury column, also attached to the pipe leading from the throat of the inner venturi. This mercury column is not only inscribed in inches of mercury, but is also calibrated in cubic feet of air per minute, as shown in Fig. 5. When the mercury column registers the desired number of cubic feet of standard air per minute, handwheel *G* is locked. Any change in air flow through the venturi will change the suction in the pipe leading from the throat of the inner venturi to the mercury pot shown in Fig. 4, and also to the gage in Fig. 5. A change of suction on the mercury pot, however, influences the governing mechanism so as to increase the steam admission to the turbine when the suction decreases, or to decrease the steam admission to the turbine when the suction increases. By this means constant-volume governing is obtained. Increasing the steam admission to the turbine speeds up the unit, thereby increasing the discharge pressure of the compressor, and vice versa. Equilibrium must be established between the spring tension set by handwheel *G* and the pressure in the confined space in the mercury pot before the governing mechanism comes to rest.

The calibration of mercury column indicating number of cubic feet of air per minute refers to standard air, that is, air of the average temperature and barometer and humidity for which the unit has been calibrated. Fig. 5 shows a calibrated scale for a normal capacity of 25,000 cubic feet of air per minute, whereas Fig. 3 shows a multiple venturi of a much greater normal capacity, probably 40,000 cubic feet per minute.

The second method for regulating turbo-compressors for blast-furnace work involves the use of the impact float which was originally conceived as part of the means for constant-volume governing. Fig. 2 shows the impact float suspended in a conical pipe and attached to a beam calibrated in cubic feet of air per minute. If this beam were attached by linkages to the governing mechanism of the driver of a centrifugal compressor, it could be made to take care of its governing.

Fig. 6 shows such a constant-volume governor. Float *F* is suspended by a vertical rod from beam *B*. The float is made so it can be heated with a small amount of compressed air introduced through the hollow suspension rod *S* so as to prevent moisture from condensing and freezing upon the float in winter. The beam is fulcrumed at *A* and is balanced by counterweight *C* and movable sliding weight *W*. Dashpot *D* prevents too rapid movements or oscillations. Handwheel *H* on one end of the beam moves the sliding weight *W* longitudinally along the beam by means of a threaded shaft and nut. The sliding weight can thus be set at any definite position indicating the desired volume of air per minute. Any movement of the beam is transmitted through linkages *M*, *N*, *O* and *T* to a controlling pilot valve *V* which will admit steam or oil under pressure to either one or the other side of a piston *P*. This piston is connected directly to a nest of controlling valves which admit steam to separate groups of turbine nozzles. The turbine governor *G* is used as a speed-limiting device, so arranged that when the turbine reaches a speed corresponding to that at which the compressor would deliver the maximum permissible pressure, it moves linkages *L*, *K*, and *N* and thereby influences the governing pilot valve from opening more valves for steam admission. In other words, at this speed it takes the control of the turbine out of the hands of the constant-volume governor.

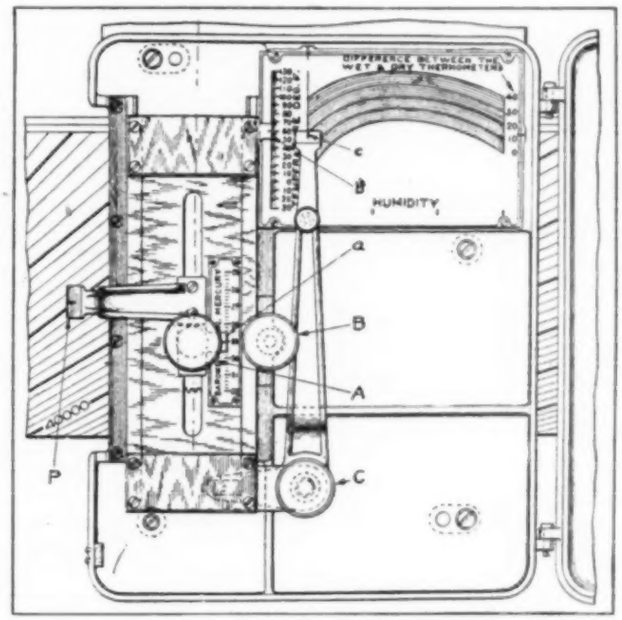


FIG. 7—VIEW OF CORRECTOR SHOWING DETAILS

The important feature of this method of constant-volume governing is the very small pressure drop involved by the air passing through the conical pipe of the meter. The area of the float is so large that a very low velocity of air and an extremely small pressure difference on the two sides of the float is sufficient to afford all the force necessary to move the entire governing mechanism. This fact also makes the governor sensitive to the smallest variation in the quantity of air passing through the compressor.

The force exerted upon the impact float when used as a constant-volume governor can be determined from equation [2].

It has been found advisable to make the area of such a float equal to

$$A = 700(Q_1^2/Q)\ [1\vee(p^2Y)]$$ [3] in which

A = area of float in square feet.

Q = correct quantity of cubic feet of standard air per minute for a definite position of sliding weight.

$Q_1 = Q + q$.

q = smallest change of volume in cubic feet of air per minute desired to produce an effect governing.

Y = density of air in pounds per cubic foot.

p = mean effective pressure in pounds per square inch for which the compressor has been designed.

The smaller the value of q, the more sensitive will be the governing and the smaller will be the force available for governing purposes. If q is taken reasonably large the governing forces become greater, but the constant-volume governor will be less sensitive. In other words, q is a measure of the per cent of the regulation desired.

When the float is in proper position for the compressor to deliver its normal rating of air against the normal pressure, the annulus area between the

float and the cone may be found from the following equation:

$$a = 0.0017Q\sqrt{(Y/Pm)} \qquad [4]$$

in which

a = annulus area in square feet.

Q = the normal rating of the compressor in cubic feet of air per minute.

Pm = the mean effective pressure corresponding to the normal pressure rating in pounds per square inch.

Y = density of air in pounds per cubic foot.

It is advisable to make the inlet-pipe diameter for supplying atmosphere air to the constant-volume governor and hence to the compressor of such diameter as to limit the velocity of air to approximately 30 feet per second. The constant-volume-governor cone should extend into an inlet box which would admit air with uniform distribution into the cone. It is therefore advisable to have the inlet box as large as possible. The following table gives an idea of the float forces and float areas employed in practice, the float force having been measured experimentally in each case:

Rating of unit, cu. ft. of air per min.	Quantity of air, cu. ft. per min.	Float area, sq. ft.	Float force, lb.
50,000	45,000	7.43	168
40,000	40,000	6.87	167
	35,000		128
30,000	30,000	4.90	171
	25,000		118
	22,500		112
20,000	20,000	3.14	89
	18,300		75

Both the venturi-meter and the impact-float methods of constant-volume governing applied to centrifugal compressors have resulted in improving the regulation of blast furnaces. Unfortunately, this means of regulating cannot be applied to any other type of air-compressing machinery because all other known types of compressors do not produce an absolutely steady flow of air. With careful analysis of the iron ore and coke charged to the furnace and a careful weighing of them as they are charged, the amount of oxygen necessary for combustion of the coke and reduction of the iron ore is accurately and easily determined. It is then only necessary in the venturi method to adjust the governing mechanism so that the indicating mercury column shows the desired quantity of atmospheric air per minute; or, in the impact-float method, merely to set the sliding weight on the governing beam to the indicated quantity of atmospheric air desired. In the latter case the weight can be set immediately and the governor will automatically establish the proper air flow, whereas, in the former case, adjustment must be made slowly until the desired air flow is obtained. In both cases, however, if the atmospheric conditions of the inlet air change from the so-called standard or average conditions for which the governors were calibrated, the actual quantity of air delivered, or more correctly, the actual *weight* of oxygen sent to the blast furnace, will vary. This variation may be considerable.

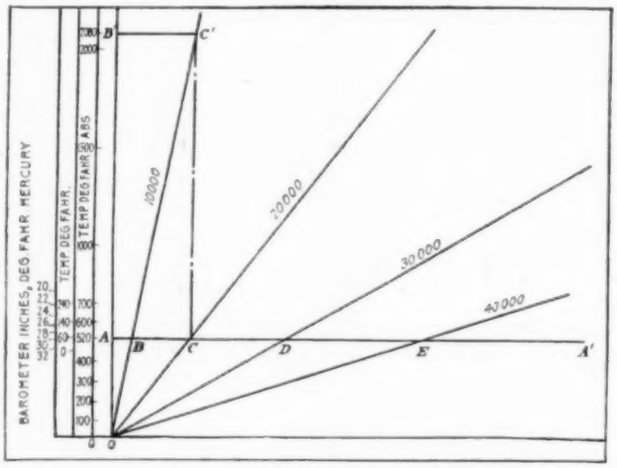


FIG. 8—DIAGRAM ILLUSTRATING CONSTRUCTION OF SCALES ON VOLUME CORRECTOR

For instance, if the standard air conditions are taken as dry air at 60 degrees Fahr. and 29 inches of mercury and the governor is calibrated for these conditions, it is possible to conceive a summer condition of 100 degrees Fahr. with a barometer of 26 inches and fully saturated air, as on a rainy and stormy day. There is 14 per cent less oxygen per cubic foot of air under these conditions than under standard conditions. In winter, atmospheric air may be at 0 degrees Fahr., the air perfectly dry and a barometer of 30 inches of mercury. A cubic foot of this air will contain 8 per cent more oxygen than the standard air. It is ,therefore, perfectly possible to supply from 8 per cent too much oxygen to 14 per cent too little oxygen to the blast furnace, if regulation is dependent on constant-volume-governor settings of standard or average conditions of atmospheric air.

The main object of this article is to describe a new instrument named a volume corrector which can be applied to the sliding weight and calibrated scale of an impact-float constant-volume governor for correcting this governor when handling air of any temperature, barometer or humidity. An instrument similar in principle and somewhat similar in construction can also be applied to the indicating mercury column of the venturi meter so as to obtain proper volume correction.

The volume corrector applied to the impact-float constant-volume governor is shown in Fig. 6. The scale beam B, instead of having vertical calibration lines for standard conditions of air, has sloping constant-volume lines engraved upon it. The volume corrector proper is mounted on the front of the sliding weight W.

Fig. 7 shows a little more clearly the arrangement of this instrument. There are three milled heads, A, B, and C, provided for adjusting pointers indicating barometer, temperature and humidity. All that is required of the operator is to set these pointers correctly. After obtaining the barometer reading from a standard barometer, and the temperature of the incoming air, and observing the existing humidity, which is usually done by noting the temperature difference between a wet and dry-bulb thermometer, pointer a is set at the proper barometric reading, pointer b at the proper temperature reading, and pointer c moved so as to intersect the curve corresponding to the observed temperature difference between the wet and dry-bulb thermometers.

The movement of each of these pointers influences the final position of the main pointer P. This main pointer moves in a vertical direction with respect to the scale on the beam. After the volume corrector is properly set, the sliding weight to which the volume corrector is permanently attached is moved horizontally along the beam until the main pointer P intersects the sloping line on the graduated scale designating the proper volume of standard air required. When so set the sliding weight is in the proper position. This permits corrections to be made for variation in temperature, barometer and humidity so that a constant *weight* of oxygen is supplied no matter what the conditions of the atmospheric air. Having determined that the blast furnace requires a definite volume of standard air (dry air at 60 degrees Fahr. and 29 inches of mercury), the governor with corrected setting of the sliding weight will deliver the proper amount of actual air which would contain the same *weight* of oxygen as would be contained in the required quantity of standard air.

The amount of oxygen in dry air varies directly as the density of the air. The density of air is directly proportional to the barometric pressure and inversely proportional to the absolute temperature. Expressed symbolically, Y varies directly as B/T. As the float

force is proportional to M^2/Y, a change in density Y with the governor set to maintain a constant weight M of air per second will cause the governor to change the speed of the compressor until a new weight M_1 is delivered, such that the new value of M_1^2/Y_1 is the same as the original value of M^2/Y. Expressed symbolically, for a given setting of the sliding weight, M^2 varies directly as Y, or M varies directly as $\sqrt{Y}$ varies directly as $\sqrt{(B/T)}$. For moist air the barometer no longer represents the pressure of the air itself, for part of the barometric pressure is due to the vapor pressure in the air. This vapor pressure must therefore be subtracted from the observed barometric pressure in order to get the net air pressure to be used in computing the air density and hence the weight of oxygen per cubic foot of air. For saturated air, a relative humidity of 100 per cent the vapor pressure can be read directly from steam tables for the observed atmospheric temperature. If the air is not quite saturated, the relative humidity, or the percentage of the possible maximum of moisture in the air, can be determined in a number of ways; usually, from a dry and wet-bulb thermometer arrangement. The vapor pressure for a given temperature is proportional to the relative humidity, and this must then be subtracted from the observed barometric pressure in computing the air density.

How Scale Was Designed

The graduated scale on the beam of the constant-volume governor was designed by taking a horizontal base line such as was shown in Fig. 6, and shown schematically in Fig. 8 as AA', and placing thereon the proper calibration for standard air (dry, 60 degrees Fahr., 29 inches of mercury). The zero on this line gives the position of the sliding weight when the constant-volume governor beam is in equilibrium and no air is flowing. The point B (Fig. 8) represents the position of the sliding weight for 10,000 cubic feet flow; and point C its position for 20,000 cubic feet flow, etc. The distance AC is made equal to four times AB. Similarly the distance AD, where D represents the 30,000 cubic feet point, is made equal to nine times AB. With respect to temperature, the graduations on AA' hold good so long as the prevailing atmospheric temperature is 520 degrees Fahr. absolute. When the prevailing temperature is other than 520 degrees Fahr. absolute, the relations of the distances AB, AC, AD to each other remain unchanged; but they must all be multiplied or foreshortened by the same ratio. This is accomplished in the following manner:

Referring to Fig. 8, let the line OAB' be perpendicular to the base line AA'; and let OA represent to some scale 520 degrees Fahr. absolute, and OB' represent 2080 degrees Fahr. absolute to the same scale, so that $OB' = 4\ OA$. Draw $B'C'$ parallel to AA' and CC' parallel to OB'. Also prolong the straight line OB until it intersects the line $B'C'$ in the point P (not shown). The triangles OAB and $OB'P$ being similar, $B'P : AB :: OB' : OA$; or $B'P = 4\ AB$. But $B'C' = AC = 4\ AB$. Therefore $B'P = B'C'$; or P coincides with C'. In other words, the intersection C' of the line CC' with $B'C'$ is a point on the straight line OB.

In actal operation when the governor is set to deliver 20,000 cubic feet of standard air per minute for a temperature of 520 degrees Fahr. and should the actual temperature be four times as high, or 2080 degrees Fahr. absolute, the governor will, with the same setting of the sliding weight, regulate for only 10,000 cubic feet of standard air per minute, because the density of the air at 2080 degrees Fahr. absolute is one-fourth of that at 520 degrees Fahr. absolute. The pointer of the sliding weight must under those conditions then read 10,000 cubic feet without the sliding weight itself being disturbed in any way. In the volume corrector this would be accomplished by pushing up the final pointer along a uniform temperature scale until it reads 2080 degrees Fahr. absolute, because the pointer traveling upward would then, as proved above, just intersect the 10,000 cubic feet line OBC'. It will be noticed that all the sloping lines representing definite volumes of air per minute meet at O. This would represent the point of absolute zero if the same temperature scale was carried down on the prolongation of the line AB. From this it can be seen that if the volume corrector be made to carry a temperature scale with the same distances as employed in the engraving of the scale on the beam, and the main pointer P of the volume corrector be made to move vertically up and down the proper distance to this scale, the sliding weight can be set for any observed temperature of atmospheric air so as to deliver the proper volume of air containing the same weight of oxygen as is contained in the previously calculated necessary volume of air of standard conditions.

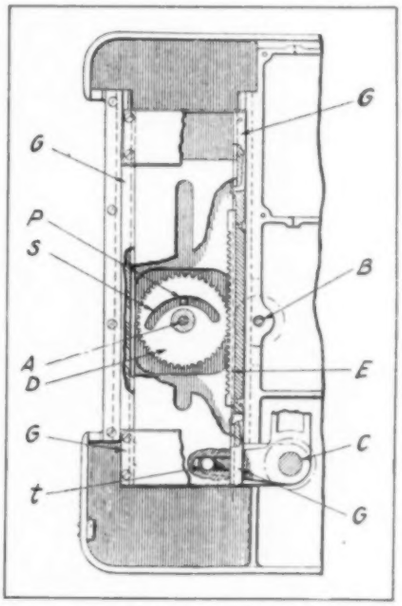


FIG. 9—SECTIONAL VIEW OF VOLUME CORRECTOR

Further consideration will show that as far as the density or the square of the volume is concerned, doubling the absolute temperature is equivalent to having the barometer. In other words, any barometric change can be expressed by an equivalent temperature change. For instance, if 29 inches of mercury is taken as the standard barometer and 60 degrees Fahr. (520 degrees absolute) as the standard temperature, a change to 28 inches barometer, the temperature remaining at 60 degrees Fahr., is equivalent to a change to a temperature of $(29 \times 520)/28$ or 538.6 degrees Fahr. absolute (78.6 degrees Fahr.) with the barometer remaining at 29 inches of mercury. The distance on the barometer scale from 29 inches to 28 inches must therefore equal the distance from 60 degrees Fahr. to 78.6 degrees Fahr. on the thermometer scale, whereas the correction necessary from 29 to 25 inches of mercury barometer is equivalent to a change to a temperature of $(29 \times 520)/25$ or 603.2 degrees Fahr. absolute (143.2 degrees Fahr.) with the barometer remaining at 29. The distance on the barometer scale from 29 to 25 inches must therefore equal the distance from 60 degrees Fahr. to 143.2 degrees Fahr.

How Uniformity is Accomplished

The barometric scale constructed on the above principle for the volume corrector is evidently a reverse and reciprocal, that is, non-uniform scale. For constructional reasons, and chiefly to take care of humidity corrections explained later, it is desirable to have this scale uniform without affecting in any way the accuracy of the instrument. This is accomplished in the following manner:

Referring to Fig. 9, which gives a view of the volume corrector shown in Fig. 7, but with some of the front cover plate removed, A, B and C are the pins to which the milled heads A, B and C of Fig. 7 are attached. The main pointer in Fig. 7 is moved up and down in a vertical slot by means of pin p in Fig. 9. When the operator moves milled head A so that pointer a

indicates the barometer reading, gearwheel *D* (Fig. 9) rotates about pin *A* because it is meshed into a rack *E* which remains stationary. Motion is given to pin *p* (which is held in a vertical slot) by the slot *S* in gearwheel *D*. This slot is in the form of a cam and so designed that pin *p*, and therefore the main pointer *P*, moves the proper distance vertically. The main pointer will move a less distance vertically when barometer pointer moves from 32 to 31 inches than it will when moving from 31 to 30 inches, and less from 31 to 30 inches than it will from 30 to 29 inches. Therefore, although the barometer scale over which pointer *A* moves has uniform divisions, the actual vertical distance through which the main pointe. *P* moves is non-uniform and follows a reciprocal scale.

The setting of temperature is accomplished through milled head *B* which is attached to a plate movable vertically between gibs *GG* and which carries with it the rack *E*, gearwheel *D*, and pin *p* with main pointer *P*. Moving *B* up and down does not revolve gearwheel *D* at all (that is, does not disturb the barometer setting), but simply moves main pointer *P* over a temperature scale shown in Fig. 7. Pointer *b* is set opposite the proper temperature reading.

The corrections for humidity in the volume corrector are based upon the following considerations: The barometric-pressure reading as usually observed is equal to the sum of the air pressure plus the vapor pressure. If the air is saturated, that is, if it contains all the water vapor it is capable of holding without precipitation at the particular temperature, the value of the vapor pressure at the given temperature can be ascertained experimentally or taken from the steam tables. If the degree of saturation or the relative humidity is, say, only 20 per cent or 50 per cent, then the vapor pressure as determined experimentally must be multiplied by 0.20 or 0.50 as the case may be.

Finding the Relative Humidity

The most usual method of ascertaining the relative humidity of the air is by means of a wet and dry-bulb thermometer arrangement. In its simplest form it consists of two similar thermometers, the bulb of one of which is covered by a wet piece of sponge. If the air is fully saturated no evaporation into it can take place and the two thermometers record the same temperature. When the air is only partly saturated, the evaporation from the wet bulb lowers the thermometer reading; so that the difference in the readings of the wet and dry thermometers can be taken as a measure of the relative humidity of the air. For any combination of relative humidity and atmospheric temperature the vapor pressure is a definite quantity. This vapor pressure must be subtracted from the observed barometer reading in order to give the net or correct air pressure to be used on the barometer scale above described; since it is the density and therefore the actual pressure of the air alone that is of importance, and not the density of the mixture of air and water vapor.

Can Make Corrections Mechanically

It is important to note that the humidity correction in pounds per square inch or in inches of mercury is independent of the actual barometer reading, and depends only on the atmospheric temperature and on the difference between the wet and dry-bulb thermometer readings. The humidity correction can therefore be made mechanically if the pointer *P* on the sliding weight is given an additional correction or movement which would be the equivalent amount of a certain subtraction of pressure on the barometric scale equal to the correction for the pressure due to vapor. It is for this reason that it is preferable to make the divisions on the barometric scale uniform. In this way, a half-inch mercury correction would require the same movement no matter at what reading the barometer scale happened to be set. As will be shown later, the volume corrector accomplishes this; therefore, no matter where the barometer pointer *a* is set, the humidity correction moves the main pointer *P* on the sliding weight the proper amount. It will also be noticed that the humidity is a function of the atmospheric temperature, that is, when the temperature is high the water vapor in the saturated air is higher than when the temperature is low. In the volume corrector the setting of the temperature pointer *b* on the temperature scale automatically sets the humidity pointer *c* to the correct temperature also.

Referring to Fig. 7, the correction for humidity is made by loosening milled head *C* and swinging pointer *c* until it intersects or indicates the proper amount of difference in reading between the wet and dry-bulb thermometer. The movement of the long arm carrying pointer *c* about the center of milled head *C* moves pin *t* attached to a plate carrying gearwheel *D*, but does not move rack *E*. Moving gearwheel *D* vertically up or down rotates *D* because *E* is stationary and thereby moves the main pointer *P* similarly, as heretofore described.

The blast-furnace operator, knowing the chemical compositions of the coke and iron ore and the amounts charged to the furnace in a stated period of time, can determine the exact volume of standard air (dry, 60 degrees Fahr., 29 inches of mercury) which will contain the proper amount of oxygen necessary for combustion of the coke and reduction of the iron ore in the blast furnace. He need not perform any mathematical calculations as to how much more or how much less air must be supplied when the atmospheric conditions are not those considered standard in order to be sure the blast furnace is receiving at all times its exact and necessary weight of oxygen.

The volume corrector must be reset every time the operator notices any change in the barometer, temperature or difference between the wet and dry-bulb thermometer reading in order to be sure of securing the most efficient regulation. The air conditions, however, do not vary rapidly and the practice of inserting in an engine-room log every half hour the steam pressure, revolutions per minute, vacuum and other information can easily be extended to include readings of the barometer and wet and dry-bulb instrument. Even with the front cover of the volume corrector closed, transparent places are provided which permit checking or observing these settings. The need of a volume corrector is apparent from the fact that it is possible to have a variation of weight of oxygen delivered to a furnace of 5 to 10 per cent ordinarily and in extreme cases as high as 20 per cent as a result of variations in atmospheric-air conditions, especially as between winter and summer.

Good Housing Reduces Labor Turnover

In a paper presented at the June meeting of the American Society of Mechanical Engineers in Worcester, Mass., by Leslie H. Allen, Boston, responses to a questionnaire sent to 840 industrial establishments are summarized to emphasize the need for better housing facilities.

The returns from the questionnaire, issued by the Aberthaw Construction Co., with which Mr. Allen is associated, indicate that more than half the number of plants reporting adequate housing facilities have a turnover of less than 50 per cent while only a third of the plants where housing is insufficient report as low a turnover as this. Combining all plants reporting a turnover of less than 100 per cent the figures are only slightly in favor of those which have adequate housing. Above this point the advantage rests with the well-housed plants.

The investigations show that one of the most important causes of the present abnormal labor turnover is the lack of sufficient homes to house the population around industrial plants.

Safety Code for Electric Cranes

Complete Set of Rules for Operators Formulated by Safety Committee Presented to Association of Iron and Steel Electrical Engineers—Employers Urged to Adopt Them to Avoid Losses Through Damage Claims

A COMPLETE set of rules for the safe operation of electric cranes which may be the means of avoiding heavy losses through damage claims and which were prepared after an exhaustive study of the situation with respect to the rights of employers and employes and the law was presented to the Association of Iron and Steel Electrical Engineers by its safety committee at the association's twelfth annual convention in Baltimore, Sept. 11-14.

The committee in its report emphasized the necessity of the employer placing in the hands of his employes printed rules that should be complied with for prevention of accidents, stating that only by so doing may the employer remove the possibility of an injured workman obtaining excessive damages on the grounds that he had not been properly warned. Verbal instruction may be denied and a doubt created which would be favorable to the contestant. The law implies and in some cases demands that hazards of every situation employes are brought in contact with shall be made known to them before they begin work; also that they be instructed how to do their work so that no injury befall themselves or fellow workmen.

The committee declares that the rules should be understood by employers as well as employes and that they should be carried out even at the cost of delays. The rules provide for their own enforcement, each rule being followed by explanatory paragraphs stating the authority and duty of the employe. The rules follow:

1. While the operators of cranes usually are subject to orders of operating foremen, in the departments where they are employed, they should not start a motor even when ordered to do so, if so doing is likely to cause an accident.

(a) A signal to stop the travel of a crane or the movement of any of its parts, by whoever given, should be obeyed.

(b) A motor should not be started, to make a lift, if the operator knows that an improper hitch has been made with chains or slings, or if hooks permanently attached to the crane fixtures are not properly adjusted.

(c) In any case of doubt as to making a lift with safety the crane operator should call the attention of the foreman in charge to the condition that created the doubt.

2. The crane operator should be held responsible for the safe condition of his crane insomuch as he should know by observation from his cab and from inspections of the entire crane.

(a) He should see that all bearings are properly oiled; that all cables are traveling properly on their drums; that brakes, limited devices, controllers, switches, hooks, yokes, blocks and other attachments are in good and proper condition.

3. Operation of cranes while doing construction or repair work should be governed by a code of signals prescribed by the management. They should be given by some one person known by the operator to have authority. On occasions when it obviously is necessary to deviate from this rule the operator should act with exceeding caution.

(a) Cranes engaged in their regular routine work should follow such practices as is the custom in the mills they are operated in and as has been agreed on by the operating management.

(b) Changing rolls, removing and replacing parts of machinery, working two cranes to lift one load, and all unusual operations are classified with repair work and operators should be governed by signals when cranes are so employed.

4. When more than one crane is operating on a runway, an audible signal should be sounded, to avoid collisiops when moving. Signals should be sounded when cranes are moving while carrying suspended loads in the vicinity of where men are working.

5. Cranes carrying material should be so manipulated as to avoid carrying suspended loads, or magnets with or without loads, over men working below. In cases where men working below cannot or do not from any cause whatever move away the crane should stop if the line of travel of the load or magnet is over the workmen.

6. Operators on leaving their crane cabs to inspect, oil or repair parts, or to get off the crane, should open the main switch and lock it open with a safety seal lock.

(a) Switches controlling the current to magnets should be kept constantly open and locked open while the magnets are detached, or while they are not in use.

(b) On notification from workmen that they want to disconnect the magnet, the operator should open the main switch and lock it open, before the wires are disconnected.

7. When handling ladles filled with molten metal, the brakes for controlling ladle hoists should be tried to see if they are in good working order, before the ladle is moved from over its support. To make this trial the ladle should be lifted a slight distance then apply the brake to see if it will hold the load.

(a) Ladle cranes with but single motors and outfits for the ladle hoists should not be used to handle a ladle containing metal when the brakes will not hold.

8. Operators should not leave the crane cab for any purpose whatever while a heat of metal is suspended from the crane. In case any adjustment of parts of the crane is required help should be called on to make it.

9. Operators should be responsible for preventing men from riding on their cranes who are not required to do so for some purpose. They also should be responsible for preventing men from riding on any attachment to the cranes as hooks, magnets, etc.

(a) At all times, whether carrying loads or not, hooks and chains should be kept high enough to clear men or apparatus below the crane.

(b) Blocks should not be lowered below a point where less than one and one-half turns of cable will remain on the drum.

10. It is not good practice to make side pulls. If they are permitted they never should be made by use of ladle hoist.

11. Prompt action is required to stop the descent of a load when the brake will not hold. If it should be necessary to apply power to a motor in order to stop the travel of a crane or the descent of a load the contact point of the controller lever should be moved for lifting or reversing as the case may require, one point only beyond the off position. If this does not give enough power then try the second point, continuing the movement one point at a time as necessity requires, but no more power should be applied than is actually required to bring the crane or load to a stop.

12. Two or more safety seal locks for locking switches open should be carried in crane cabs along with the tool equipment. These locks should not be used for any other purpose than to keep a circuit open when the closing of it might cause an accident.

(a) The crane operator should use a safety lock for locking the main switch open every time he leaves the cab to go on the crane runway, or out on the crane for inspection or to make adjustment of parts.

(b) The inspector should, in addition to notifying the crane operator of his intentions, use a safety lock for locking the main switch open, every time he goes out on the crane.

(c) Repairmen should in addition to notifying the crane operator of their intentions, use a safety lock for locking the main switch open every time they go on the crane. The foreman in charge of repairs should be responsible for locking open the main switch and all individual switches, while repairs are going on and for removing the locks when the repairs are finished and the men are off the crane.

(d) After all safety locks have been removed from the main switch the crane operator should assure himself that nobody is in danger from movement of crane before he closes main switch.

(13) A crane should be inspected by its operator when he takes charge of it at the beginning of his turn. The regular crane inspector should make inspection as soon as he can after beginning his daily work. Operators and inspectors should make inspection of the cranes at every convenient opportunity. Any defect that they may not be able to repair or correct though it may not be serious enough to require stoppage of the crane should be repeatedly reported until it has been cared for.

14. Ordinarily when inspecting a crane the main switch should be open and locked open with a safety lock. If in the course of inspection it should be necessary to see a motor running or see some part of the equipment with current on the inspector should notify the crane operator to close main switch after locking open all other switches than the switch controlling the circuit he desires should be closed. The inspector and operator should keep in close touch with each other's movements and when the current is no longer needed for an individual circuit, the inspector should see that the operator again opens the main switch and locks it open.

15. Inspectors should be held responsible for the correct setting of circuit breakers and the proper size of fuses.

16. Inspectors and repairmen should see that no loose material is left on the cranes that might fall off.

17. Work is sometimes done on or near crane runways, by employes of the various mechanical departments when it may be necessary for them to get on and off the runway at times. It notified that work is to be done on or near a crane runway, or on seeing evidence that employes are going to do any, the crane operator should take necessary steps to have the following regulations complied with: A reliable flagman should be detailed to ride in the cab of each crane that may be on the runway, whose duty should be to look after the safety of the workmen. The flagman should place track torpedoes on the runway rail that is nearest to the crane cab at points not less than 75 feet each way if necessary from the place where men are working, using two torpedoes at each point, and should see that the crane is not taken into the protected zone unless he knows the workmen are out of danger. The operator on hearing a torpedo explode should immediately stop his crane.

(a) In cases where a device is used for automatically opening the circuit and applying the brake to stop the bridge travel all other methods for limiting the travel of the crane, except placing track torpedoes, may be dispensed with.

18. Under no circumstances should circuit breakers, limit devices or other safety appliances be locked or otherwise rendered inoperative.

19. Limit switches installed for safety should not be brought into service intentionally, nor should they be depended upon to stop the travel of a hoist.

20. If power goes off switches should be pulled out and controllers moved to the off position.

21. Under no circumstances should bridge and hoist, or trolley and hoist, be operated simultaneously unless the load is hanging.

22. Before starting to remove a hoist shaft, change a hoist brake or crane armature, where practicable, the ropes or chains should be run entirely off the drum; always when performing any of these operations, the gearing should be carefully locked to prevent the drum turning.

Germany Still Covets French Iron Mines

THAT Germany still covets the ore basins of Briey and Longwy is evident from a memorial of the Association of German Iron and Steel Manufacturers and the Association of German Ferro-Metallurgists, a translation of which prepared by Sir Robert Hadfield, the English iron-master, has been just received in this country. The memorial points out with exhaustive arguments the extraordinary economic importance of the French Lorraine iron ore basins. The expositions of these associations which are based on careful investigations, demonstrate the fact, known to every one acquainted with the subject, that the German industry is dependent on foreign countries to a considerable extent for its supplies of iron ore.

It cannot be doubted that this dependency involves great dangers not only of an economic but of a political nature and it is fully demonstrated in the memorial, more especially with reference to the experiences during the present war. The memorial deduces therefrom the necessity of incorporating the basins of Briey and Longwy in the territory of the German empire. It points out that the future of the German iron industry and also of the German military power can be secured thereby for a century. Thereby the 2,000,000 German workmen engaged in the iron producing and manufacturing industry and the cognate economic branches, with their 6,000,000 to 8,000,000 of dependants, would find permanent employment and a good living. The memorial further shows that even agriculture and the food supply of the German people would be greatly benefited by retention of the possession of Briey and Longwy, because, by the metallurgic treatment of the phosphorus Lorraine ores Thomas slag is obtained, which our soil is most highly in need of, as a manure, in the powdered state.

Evidence is Piling Up

THE final possession of the Briey and Longwy ore basins continues the basis of considerable discussion in both industrial and political circles in allied and enemy countries. Two more papers bearing on this subject have reached England from Germany. Translation of these papers made by Sir Robert Hadfield, F. R. S., the widely known English iron-master discloses no change in the attitude of the German industrial leaders and in light of recent political developments in Germany, the term industrial leaders has come to be synonymous with German government.

The proved reserves of iron ore existing in the basins of Briey and Longwy are estimated according to the investigations hitherto made, at about 2,650,000,000 tons, containing about 930,000,000 tons of iron. But probably the reserves of iron ore in these districts are considerably larger still, as these deposits have not yet been explored, down to a sufficient depth to the west. If France were compelled to cede these basins she would make over nearly one-third of her wealth of ore, and Germany would have her iron deposits, and hence its resources of iron doubled. Nevertheless Germany would still have, in her subterranean treasures, no larger reserves of ore than France and not nearly such good qualities of ore.

Another translation prepared is of a paper on French Lorraine by Dr. M. Schlenker, syndic of the chamber of commerce, Saarbrucken. This translation reads:

Regular readers of French newspapers will find that public opinion in France is lately occupying itself in a greatly increasing measure with the importance of the French Lorraine iron ore district. Thus Senator Berenger, secretary of the national defence committee of the senate after coining the motto: "In this war, iron is king," has pointed out that Ger-

Statistical Summary of Ore Reserves in Europe

Territory	Proved ore reserves: Tons	Per cent	Metallic tons	Anticipated ore reserves: Tons	Per cent	Metallic tons
German Customs Union	3877.7	31.4	1360.0	.....	28.8	.....
France	3300.0	27.4	1140.0	.....	24.0	.....
Belgium	62.0	0.5	25.0	25.0	0.5	10.0
Great Britain	1300.0	10.8	455.0	37,700.0	9.8	10,830.0
Sweden	1158.0	9.6	740.0	178.0	15.6	105.0
European Russia	864.6	7.2	387.2	1,056.3	8.2	424.7
Spain	711.0	5.9	349.0	.....	7.3	.....
Norway	367.0	3.0	124.0	1,545.0	2.6	525.0
Austria	250.9	2.1	90.4	323.2	1.9	97.0
Hungary	33.1	0.3	13.1	78.9	0.2	34.1
Total	11923.4	...	4683.7	40,906.4	...	12,025.8

many's main purpose in the thrust against Verdun was to secure her hold on the Briey iron ore basis and that the purpose of the savage submarine warfare was above all to deprive France, which through occupation of the Briey basin had already lost 90 per cent of its iron, of supplies of iron from England and America by the torpedoing of merchant vessels. The ore basin of Briey, we may read again and again in the French papers, is the battlefield on which France and Germany are fighting for the dominion of iron.

Iron Ore Reserves of Europe

A discussion of the economic importance of the French Lorraine ore basin may suitably be prefaced by a summary of the iron ore reserves of Europe. These reserves, according to an acceptable statistical summary recently published by the northwestern group of the Association of German Iron and Steel Manufacturers, are in millions of tons, shown in the accompanying table.

Out of the proved reserves of iron ore 28.8 per cent of the European deposits fell to the share of Germany, while 24 per cent fell to France, out of the world's deposits, Germany's share was 13 per cent and that of France 11 per cent. Hence, France comes near to Germany.

The extraction of iron ore throughout the entire world in 1913 amounted to 160,393,000 tons, segregated as follows: United States 62,972,000 tons, or 39 per cent, Germany and Luxemburg 35,941,000 tons, or 22 per cent, France 21,500,000 tons, or 13 per cent, Great Britain 16,254,000 tons, or 10 per cent, Spain 9,861,000 tons, or 6 per cent, Sweden 7,479,000 tons, or 5 per cent.

The ore supply of Germany for 1913 in tons is shown in the accompanying table.

Forty-four per cent of the contents of iron in the ore came from abroad and from France 1,410,000 tons, equal to 18.29 per cent of the total imports.

The extraction of ore in France in 1913 amounted altogether to 21,500,000 tons, of which 19,800,000 tons were secured in the department of Meurthe-et-Moselle and of this quantity the Briey basin proper contributed 15,000,000 tons. The iron content of the Briey basin ore was about 5,000,000 tons. This was equal to about 67 per cent of our imports of metal and 28 per cent of our supply of metallic iron.

Great Increase Shown in Output of Cadmium

The United States from a position of being almost entirely dependent on foreign sources of supply, has in the past 10 years forged ahead so steadily in the production of cadmium that in 1917, according to a report by the geological survey, there was produced not only all that was needed at home but also some was exported. Prior to the war, the greater part of domestic requirements were met from imports. Germany being the chief source of foreign supplies, only small quantities came in during 1914 or 1915, while in 1916 and 1917, none was received.

Domestic production has increased rapidly in the past two years. In 1916, domestic production of metallic cadmium was 135,212 pounds and of cadmium sulphide 22,176 pounds; last year, the output mounted to 207,408 pounds of metallic, and 50,169 pounds of the sulphide, a showing that is even more remarkable when contrasted with the record of 1915, when metallic cadmium to the amount of 91,415 pounds and sulphides aggregating 10,642 pounds constituted the production. Thus in two years, domestic production of metallic cadmium has more than doubled, while sulphide of cadmium last year was almost ten times that of two years before.

No figures of German production have been available for the past four years, but it is interesting to observe that from 1907 to 1913, inclusive, Germany had an average annual output of metallic cadmium of about 81,000 pounds. German production in 1907 was 72,639 pounds; in 1908, 72,741 pounds; in 1909, 81,982 pounds; in 1910, 90,516 pounds; in 1911, 93,861; in 1912, 94,262 pounds, and in 1913, 81,993 pounds.

Most of the cadmium in the United States is derived from baghouse dusts at lead smelters that treat lead ores containing more or less zinc. Some also is recovered in purifying the solution of zinc sulphate used in making lithopone while another source is the residue left in making zinc chloride from low-grade zinc ores and from zinc ashes and drosses. Still other sources which may become important are the anode muds resulting from the electrolytic refining of spelter and the muds that are precipitated in purifying the electrolytic preparatory to depositing zinc in the reduction of zinc ores by leaching and electrolytic deposition. The fumes driven off in making brass are richer in cadmium than the spelter used, for the more volatile cadmium is driven off in greater proportion than the zinc and is thus concentrated in the fumes. It has been estimated that 400 pounds of cadmium are lost daily in fumes from the brass foundries at Waterbury, Conn.

Cadmium is used in metallic form chiefly as an alloy where the intent is to lower the melting point of metals with which it is used. Since tin has become so scarce cadmium has been increasingly used as a substitute for it in solders. Though cadmium is worth half again as much as tin, it can be profitably used, for less cadmium and more lead is used; moreover, the tin available is required for purposes for which there is no substitute. Cadmium and its compounds have been declared contraband by all belligerents and this indicates military uses, though no information is available along these lines. Cadmium sulphides find their principle use in arts, medicine and electroplating.

Ore Supply of Germany in 1913

	Quantity of ore	Metallic iron
Extracted	35,941,000	10,541,500
Imported	14,019,000	7,710,400
	49,960,000	18,251,900
Exported	2,613,000	783,900
Supply for home consumption	47,347,000	17,468,000

The General Electric Co. has declared the regular 2 per cent quarterly dividend.

Fight Out Ore Disputes in Seventies

How Furnacemen Joined Forces to Compel Ore Producers to Meet Their Views in Maintaining Desirable Quality and Conditions is Told by Proceedings of Historic Convention Held in Pittsburgh

AN adjourned meeting of the consumers of western ores was held at Pittsburgh on Jan. 29, 1873. The committee appointed to confer with the representatives of the various Lake Superior ore companies reported no personal interviews, but letters were received from most of them.

The committee to confer with the Iron Mountain Ore Co. reported that they visited Mr. Harrison at St. Louis. He adhered rigidly to the price fixed, but stated he was anxious to act fairly and liberally with their customers, and would probably make some of the desired modification of the terms of their circular; that they had gone to considerable expense in erecting machinery to clean their ores, and expected in future ores of full standard value.

An interchange of opinion was had, regarding the future supplies of ore, and it appeared from all the data obtainable, that new sources of supply must be found to assure a steady running of furnaces now built and building.

A committee of three, consisting of Messrs. Noble, Owens and Pechin, was appointed to collect information on this point, and report at subsequent meeting, or by circular.

Red Ores Deteriorate

A number of large furnace owners gave their experience as regards the character of ores delivered to them during the last year, and the effect upon the quality of iron produced. It appeared that, as a rule, the black ores had been delivered in good order and of usual excellence, but a very marked deterioration had taken place in almost all of the red ores. Not only had the average percentage of iron largely decreased, but the quality of iron made from them was decidedly inferior, and the usual and known methods of working had failed to correct this inferiority.

Gentlemen of well-known character and intelligence, who were eye-witnesses, last summer, of the manner of loading and shipping these ores, stated that few, if any, precautions were taken at the mines and shipping points to guard against second rate ores being mixed up with high-grade ores.

The sense of the meeting was embodied in the resolutions as printed herewith, and as it was apparent that the ore producers had misconstrued the object of the convention, and incorrect statements had been current, it was deemed advisable to have the whole proceedings published in a proper form, and, therefore, it was

RESOLVED, That the officers of the convention be directed to have printed the original call, the resolutions as adopted, and the correspondence had, and forward the same to all parties interested.

WM. EVERSON, Chairman.
E. C. PECHIN, Secretary.

The Original Call

Rooms of the Western Iron Association.
Pittsburgh, Dec. 27, 1872.

RESOLVED, That this association call a convention of all parties operating blast furnaces, rolling mills, and all other consumers of Missouri and Lake Superior iron ore, to meet at the rooms of the association, Fourth avenue, over the Safe Deposit Co., Pittsburgh, Wednesday, Jan. 15, 1873, at 12 o'clock, to consider:

1st. The propriety of contracting for ores at the extravagant prices some mining companies have fixed for 1873.

2nd. The necessity for action that will induce a more thorough selection of ore than has been made heretofore, to the end that purchasers may get clean stock, and not be forced to pay for clay, greenstone, spar, and other materials injurious in the manufacture as well as enhancing the cost of pig, and deteriorating quality.

3rd. The propriety of changing the present custom of purchasing early in the year, the supply for that and a part of the following year; thus throwing the risk of the market for 16 months on the purchaser.

It is believed by many that this should be borne by the producers and not by consumers.

For the foregoing reasons, and in view of the fact that the ore companies appear to think that purchasers have no rights, and are not to be consulted either as to price or quality, it is now believed that the time has come when there should be a new departure, and such united action, as will prevent undue advantage being taken of purchasers of ore. It is believed that some of the parties interested in mining, have been together in New York, with a view of fixing such extravagant prices as will make it extremely hazardous for consumers to purchase as formerly.

It is hoped that every firm using ore,

Times Have Changed

FORTY-FIVE years ago trading in iron ore between the producers and the furnacemen, was a far different matter than the smoothly-running system of the present day whereby millions of tons are put under contract with scarcely more than an exchange of correspondence. In those days differences over prices, analyses, physical qualities and other points were settled only after some vigorous controversies. These frequently called for such concerted action on the part of both the ore producers and the pig iron makers as appears strangely out of gear with modern times of anti-trust regulation and of distrust of commercial collusion. A true picture of conditions in the '70s is given by the interesting proceedings of a convention of ore producers at Pittsburgh in 1873 which here is republished in full. This curious and unusual document recently has come into the possession of J. G. Butler, Jr., of Youngstown. Mr. Butler attended the Pittsburgh meeting and served on the committee of conference which then was appointed. At that time he was manager of the Girard Iron Co. He and E. C. Pechin, the secretary of the meeting, who is now retired and living at Buchanan, Va., are the sole survivors of this historic gathering. Many of the names mentioned are those of men who occupied prominent positions in the iron industry of the days gone by. Mr. Hearne, was Frank J. Hearne, general manager of the Riverside Iron Works, Wheeling, now a part of the Steel corporation, and who subsequently became president of the National Tube Co. and Colorado Fuel & Iron Co.; Mr. Bennett was James I. Bennett of Graf, Bennett & Co., Pittsburgh, iron manufacturers, who built the Clinton furnace; Mr. Westerman was James Westerman of Coleman, Westerman & Co., Sharon, Pa.; Mr. Andrews was G. H. Andrews of the Andrews Bros. Co., Youngstown; Mr. Robbins was Josiah Robbins, manager of the Niles, O., furnace; Mr. Richards was William Richards, partner of the Girard Iron Co., Girard, O.

will make it a point to be at the meeting, that such action may be taken as will prevent our business being destroyed.

JAMES LEWIS, President.
THOMAS J. BURCHFIELD, Secretary.

Action of Meeting Jan. 15, 1873

Pittsburgh, Jan. 16, 1873.

Dear Sirs:—The committee of 10 appointed as stated in accompanying circular, believing that all matters of difference between the ore sellers and buyers can be satisfactorily adjusted by a personal interview, and that the magnitude of the interests involved, demand such amicable adjustment, respectfully invite, and earnestly urge, you to meet them on the evening of Tuesday, Jan. 28, at the Monongahela House, and to take part, the next day, in a joint convention of producers and consumers.

Yours respectfully,

JAMES I. BENNETT, Chairman.

P. S. Please advise, if you can be present.

Rooms of Bar Iron Association,
Pittsburgh, Jan. 16, 1873.

A convention of mill and furnace owners was held Jan. 15, at Pittsburgh, at which 50 firms and companies were represented, embracing four-fifths of the consumers of Missouri and Lake Superior ores. After an animated and harmonious discussion, the following preamble and resolutions were unanimously adopted:

WHEREAS, The prices for ores for the coming season, as asked by the Iron Mountain and Lake Superior Ore companies, and the conditions of the purchase, as announced, are such as must operate most seriously against all establishments using these ores, and in favor of furnaces located in the east and south, where raw materials are furnished at reasonable figures; and

WHEREAS, It is probable that the action of said companies has been taken without due consideration as to the effect of the oppressive and prohibitory prices named, and the unjust demands upon the consumers made, and that adherence to the same will, in the end, most injuriously affect their own and our interests; therefore,

RESOLVED, That a committee of 10 be appointed to confer with the representatives of the Iron Mountain and Lake Superior Ore companies, and to represent to them—

That the price of $10 per ton of ore at St. Louis, and $11.50 to $12 at Cleveland, will absolutely prevent establishments using the same, from manufacturing at any price that will compete with eastern irons, and compel them either to run at a loss or suspend operations; and

That the conditions in their contracts are such as to unduly favor the seller, without giving proper protection to the purchaser, and that such modification should be made as will be mutually equitable.

RESOLVED, That in the opinion of this convention, some joint action, just as to both producer and consumer, should be taken to establish a standard of 66 2-3 per cent of iron in ores, as has obtained in former years, when ores were properly mined and selected; and to accomplish this, a board of inspectors should be formed, one of whom shall be a chemist, well versed in the ores produced by said companies; said board to be selected jointly, and their compensation to be equally shared by said producers and consumers. Their decision, when required, to be made under oath, and to be conclusive and binding upon both parties.

RESOLVED, That all purchases of ore, shall be based upon a standard of 66 2-3 per cent of metallic iron, and the proper price of ores, containing spar, greenstone, clay or other impurities impairing their value and yield, shall be determined by such board of inspectors.

The following committee of conference was appointed: Messrs. Bennett, Campbell, Hearne, Noble, Westerman, Andrews, Butler, Robbins and Richards.

RESOLVED, That consumers are advised to defer purchases of ore, until the committee report, at an adjourned meeting of this convention, to be held at Pittsburgh, at the rooms of the Bar Iron association, Fourth avenue, at 12 o'clock, on Wednesday, Jan. 29, 1873, and that all parties interested are urged to be present. Adjourned.

WM. EVERSON, Chairman.
E. C. PECHIN, Secretary.

Ore Producers' Replies

Office Iron Mountain Co.,
St. Louis, Jan. 21, 1873.

JAMES I. BENNETT, Chairman.

Dear Sir:—Your circular of sixteenth instant, inviting us to meet your committee on the 28, and to take part, on the following day, in a joint convention of producers and consumers, has just been received.

In reply, I will state that it would be very inconvenient for me to go to Pittsburgh at the time named. Furthermore, as I am, by appointment, to meet your committee tomorrow, I presume it will be the less necessary for me to meet them on the 28. I believe, also, that the result of the appointed interview with the committee will be quite as satisfactory to the consumers as the result of my attendance at the convention would be.

Respectfully yours,

EDWIN HARRISON, President.
CHAS. A. PILLEY, Secretary.

P. S.—My attention has just been called to the fact that the circular was received several days ago. I saw and read the minutes of the meeting of the B. I. A. of Jan. 16, but did not, at that time, discover your invitation printed on the other half sheet, asking our attendance at the convention. Would otherwise have given an earlier reply.

C. A. P. E. H.

Gen'l Agent's Office, Jackson Iron Co.
Cleveland, Jan. 27, 1873.

JAMES I. BENNETT, Esq., Pittsburgh.

Dear Sir:—I have just returned after an absence of a week, and have to acknowledge the receipt of your circular of the 16 instant. In accordance with the request therein contained, I write today that it will be impossible for me to accept the invitation to meet your committee on the 29, at Pittsburgh.

Very truly yours,

FAYETTE BROWN, Gen. Agent.

Office Cleveland Iron Mining Co.,
Cleveland, Jan. 24, 1873.

JAMES I. BENNETT, Esq., Pittsburgh.

Dear Sir:—Your circular letter of the 16 instant, inviting me to meet the ore sellers and buyers in your city on the evening of the 28 instant, is at hand, and has received my respectful consideration. I can see no particular good to arise from such an interview. Our company has not definitely fixed the price of their ores for the coming season, nor do we believe in the good result of any combination to fix them. We expect to be governed entirely by the demand therefor, and the supply.

Having arranged to work a considerable amount of our ores, this season, on shares, we shall have but little, comparatively, to sell, and our influence at the proposed meeting would, therefore, be but slight.

Very respectfully,

SAM'L. L. MATHER, President.

New York Iron Mine, Cleveland, Brown & Co., Agt's.
Cleveland, Jan. 25, 1873.

JAMES I. BENNETT, Esq., Chairman, &c.,
Pittsburgh, Pa.

Dear Sir:—We beg to acknowledge receipt of your printed circular covering invitation to meet in convention 28 instant, at Pittsburgh, the producers and consumers of Lake Superior and Missouri ores.

The annual product of our mine is insufficient to cover the requirements of two or three of our regular customers for several years past, and with whom arrangements may possibly be made to smelt ore upon "shares." But, be the decision what it may, and while thanking you for your invitation, we fail to see wherein an interview of the kind contemplated would be of any advantage, under the circumstances, to either party. With assurances of respect and esteem, we are

Your obedient servants,

CLEVELAND, BROWN & CO., Agents.

H. B. TUTTLE & Co.,
Cleveland, Jan. 24, 1873.

JAMES I. BENNETT, Esq., Chairman,
Pittsburgh.

Dear Sir:—We have received your circular of 16 instant, inviting us to meet a committee of 10 (of which you are chairman), on the 28 instant. If the ore consumers had originally said to us, "Let us meet together and consult as to our common interest, as to prices, and as to whether it is practicable to make any improvements in the mode of the business, and get, and give information, which will be of interest and value to both sides," &c.; if such an invitation had been issued in the first place, we would have cordially responded to it. Instead of such a call, there was one issued, signed officially, for the Western Iron association, which was made up of charges against all the ore companies indiscriminately, without an exception; they were all spoken of alike as having furnished inferior ore, and all spoken of as not considering that ore buyers have any rights.

This being issued officially, gave emphasis to these indiscriminate charges, and their official circular was sent abroad in profusion.

We have since been assured, privately, by numerous individuals, that they did not mean to include us, or all the ore companies—nevertheless *all are included*, and although it may have been unintentional to make such sweeping and unjust charges, we do not see any evidence that the error was corrected by the convention, by disavowing the indiscriminate language of the circular.

On the contrary, the printed proceedings of the convention would not lead any stranger to suppose that any ore company had furnished any good ore in 1872.

These printed proceedings also strangely mix us up with the Missouri ore sellers, with whom we have nothing to do.

A little reflection will convince you that we cannot be expected to respond to an invitation for "mutual conference" while the invitation stands preceded by charges of furnishing poor ore, of not considering that ore buyers have any rights, etc., charges which were evidently not made against *us*, particularly, but actually *include* us, and which have *not been rescinded*.

Nothing but personal respect for yourself and other members, could have induced us to have even spent time in writing an answer under such circumstances. We know that the first circular was issued hastily, and that it was written under the excitement of the feeling produced by the Missouri ore circular; but there was ample opportunity to rescind or disavow the indiscriminate and unworthy language at first used.

Whenever you invite us to meet with you for mutual consideration of our common interests, we will cheerfully do so. We wish all the ideas and light on this subject which we can obtain. We could also, give you many facts which would be of great importance to you, which you may not have been situated to gather. The whole bearing of this business, on *both sides*, has our careful and thoughtful consideration. We have studied the iron market, its present condition and its outlook, we have considered the competition between the anthracite and the bituminous irons, especially for supremacy in the Pittsburgh market, and we believe that we have not left ourselves uninformed as to any of the elements which would combine to form an intelligent and sound judgment. We were endeavoring to so shape the administration of our ore supply as to lend to the *permanent prosperity of both producers and consumers*.

We could show you very quickly the solid reasons why, just at the present time, it was a very great mistake to begin to throw stones at such ore companies and ore sellers as could help the ore consumers most, just at this time when they most need it. The question of ore supply is a very serious one just at this juncture, more serious than many consumers are aware. We have seen this coming for some years, and have so pointed out to many of you. With us it is not at all a question of whether we can sell our ores at these prices, it is simply a question of *distribution*—a question which is also being *rapidly settled*.

Gentlemen, you have made a mistake in the spirit and manner of your recent movements. You are men of intelligence and good judgment, men whom we respect—and you are worthy of the respect of all good men—but in this you have been *hasty* and *unwise*.

Yours respectfully,
H. B. TUTTLE & Co.

P. S.—Our positive contracts for 1873 ore now amount to 166,000 tons, and we have yet refused all new comers.

Resolutions of Jan. 29, 1873

RESOLVED, That in the opinion of this convention, there is nothing in the language and spirit of the two circulars already issued to which any one producer can take exception. To those shipping standard, clean ores, the strictures do not apply; and to those delivering impure and inferior ores, they do, and ought to apply.

RESOLVED, That the answers received from the representatives of the various ore companies, and their positive refusal to meet with us, indicate that they do not comprehend the spirit of our movement, which is not so much to meet a present exigency, as to establish a permanent and satisfactory basis for the future conduct of business, thereby resulting in mutual and lasting benefit.

RESOLVED, That while the capital invested in ore mines is large, that invested in mills and furnaces is infinitely greater; and while the number of ore producers is small, the number of consumers is very large, at least 40 to one; therefore, the position taken by the producers, is the present benefitting of the few, at the expense of the many, and ultimate injury to both.

RESOLVED, That to this time the consumers of western ores have enjoyed an exceptionally high reputation for the quality of their manufactured iron; that this reputation cannot be maintained if an inferior ore is furnished, and that any ore company, failing either from cupidity or neglect, to properly select its ore, not only morally, if not legally, violates its contract, but inflicts loss upon those who, in good faith, deal with, and indeed, sustain it, which cannot be estimated in dollars and cents; and that as to western manufacturers, we will insist upon such action on the the part of the ore companies as will maintain the high character of our iron, and that, while fully recognizing the right of any producer to fix his price for ore, and the consumer to purchase if he so elects, we will oppose at all hazards and by all means in our power, any deterioration in the quality of the ores delivered.

N. B.—The delay in issuing this circular was caused by a printers' strike in Pittsburgh.

Fuel Briquetting in 1917 Breaks Record

The production of fuel briquets in 1917 was the greatest recorded in the history of the industry in this country, according to a bulletin recently issued by the United States geological survey. During the year there was a total production of 406,856 net tons, valued at 2,233,888, and which represents an increase over the 1916 production of approximately 38 per cent in quantity and 55 per cent in value. Because of the big demand for fuel last year briquet manufacturers had no lack of market for their product. Of the 13 plants in operation four used anthracite as a raw material; one, Arkansas semi-anthracite; two, a mixture of anthracite and bituminous slack; two, bituminous slack and sub-bituminous coal; one, semibituminous coal; one, brown lignite and two, oil gas residue.

Automatic Engine Stops Essential

Modern Devices for Averting Overspeed Where Accidents Might Occur Found Dependable When Properly Maintained—Use Could be Extended to Blast Engines—Electrical Auxiliary Arrangement Suitable

BY WALTER GREENWOOD

THE automatic engine stop performs a service distinct from that of any other control apparatus supplied for an engine; it is intended to stop an engine when the ordinary governor or apparatus fails to prevent overspeeding. Whichever type of stop apparatus is used, it sometimes fails and destroys confidence in the merit of other types, however reliable they may be. The assertion has been made by someone that "accounts of comparatively few flywheel explosions find their way into the press and that such accidents are occurring at the rate of 12 a month," also that "there are 33 per cent more flywheel explosions than boiler explosions and they are 50 per cent more costly." The need of an efficient automatic stop apparatus is obvious.

The essential requirement in such an apparatus is that its failure to function properly should be automatically registered by the stopping of the engine. The most important mechanical principles involved in the construction of automatic engine stops are quick and positive response to increase of engine speed by that part of the mechanism which makes the intial movement, and quick and positive response of the other parts.

Automatic engine stops have been known to fail because of failure of the agency acuated by centrifugal force to release the static energy held in suspense for bringing a valve into operation, through direct or indirect application of force. Applications through rope, bar or shaft would be direct; through the agency of electric current they would be indirect. With whatever design of mechanism employed by principal makers of engine stops, centrifugal force is the prime actuating medium. The agency through which it directly acts, usually a solid of high density, may be located on or in the rim of a flywheel or a collar attached to a shaft, or on any revolving part where peripheral speed synchronizes with the speed of the engine. It may be indirectly brought into action through a flyball governor driven by a belt from a revolving part that moves in synchrony with the speed of the engine. Failures have been caused by an accumulation of foreign matter in connecting pins, by disarrangement of springs, by oxidation of metallic parts and pressure of packing. All of these causes could have been discovered and guarded against by proper construction and systematic inspection.

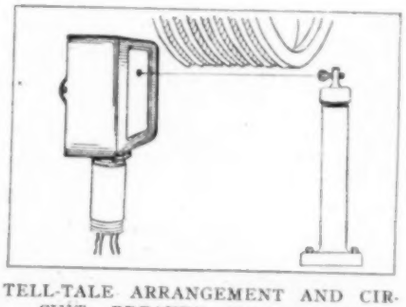
The shut-off valve of an automatic stop should be so perfect it could not fail to close when released from its fastenings. Probably failure from this cause has done more to shake confidence in automatic stops than any other kind of failure. As all these valves must have exterior connection to their shafts or stems such shafts or stems must pass through packing or have collars that will seat on bearings to prevent escape of steam. A stem that moves longitudinally is liable to stick. None but metallic packing should be used to pack valve stems. Cylinder lubricants should be admitted on the intake side of valves. In the case of turbines where there may be objection to admitting grease into steam cylinders valve stems can be lubricated by admitting the lubricant directly on them in quantities just sufficient for the purpose. In no case should a valve stem point in a line that drops below the horizontal; preferably it should point above the horizontal.

Flyball governors for tripping a latch or breaking a circuit are sensitive to the force that actuates them and can be set to trip with a small increase of acceleration. With reliable drive for the governors no conditions can arise that will prevent properly constructed flyball governors from operating. Breaking of the drives will allow the governors to swing on their masts and trip the latches. Governors can suffer considerable deterioration and yet be efficient but there should be no excuse for serious impairment of their parts.

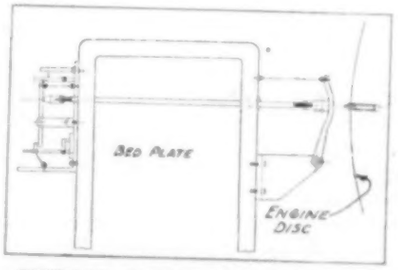
The principles involved in an elec-

The Logic of It

AUTOMATIC engine stops are indispensable adjuncts to all kinds of engines that can overspeed and cause a wreck or accident. They are dependable when carefully installed and carefully maintained. Their use probably can be extended to include blast engines and to the performance of various other duties where they would prevent wrecks. Of several types of installation, any can be relied on to act when required if it is properly constructed and reasonable effort is made to maintain it. When it is considered that the most primitive make of stops have been kept constantly in dependable condition there can be no argument to offer against the most modern designs. As the makers are not confined entirely to particular designs that will not fit all conditions a combination of principles can be made by any of them that will suit any reasonable requirements. In making an installation, consideration should be given to those features that manifestly are the most dependable and will require the least expenditure of care. This in no manner absolves one from constant watchfulness.



TELL-TALE ARRANGEMENT AND CIRCUIT BREAKER USED WITH ROPE TRANSMISSION



GENERAL ARRANGEMENT OF TRIP AND SWITCH ON REVERSING ENGINE

From a paper presented at the twelfth annual convention of the Association of Iron and Steel Electrical Engineers, Baltimore, Sept. 11-14. The author, Walter Greenwood, is safety engineer at the Ohio works of the Carnegie Steel Co., Youngstown, O.

trically-operated engine stop are well known and it is not necessary to go far into details of their construction. The force required for breaking a circuit is insignificant and the apparatus can be depended on to operate. When the current has been broken the force of gravity will bring the stop into action. If any objections raised against one or the other of the two systems can be sustained, the logical solution of the matter would be to install stops that contain a combination of both principles. The additional cost for installing the combination of methods should be so small as to be inconsiderable and it cannot add complexity without compensation. The method could claim preference because of its wider adaptability, operating by breaking the circuit from a limitless number of stations and also by disarrangement of engine parts or by breakage of them, etc. They have proved efficient in detecting failures in rope drives and stopping engines before serious damage was caused.

Auxiliary Agent Urged

Hand-operated, quick-closing valves without the automatic control feature have been installed in some cases. The omission except on blast engines is not justified since the efficiency of the automatic control feature has been fully demonstrated. While a hand-operated, quick-closing valve permits an operator to shut steam off instantly he cannot always be depended on to be close to a station. Even though it might be thought advisable to install hand-operated, quick-closing valves on blast engines to check the speed within safe limits, there could be no objections to adding the auxiliary agency of electric current, as this gives superior advantages through ability to locate stations in the most desirable places regardless of distance or elevation.

In the installation of stops entirely electrically operated, or with electrical operation for an auxiliary, the matter of using open or closed circuits is one of importance. As the principle involved is that a stop must operate regardless of results, the installation cannot be positive unless the fact that the engine is running is evidence the equipment is in perfect condition.

Automatic engine stops on reverse engines that drive two-high mills, aside from their worth for preventing accidents to persons and machinery, are effective from the economic point of view. When such engines are so equipped it is found that wear and breakage are lessened. After they have been installed a short time it will be found they are but seldom brought into action unless for trial to see if they are in order. A governor for tripping the latch and breaking the circuit cannot be successfully applied on reversing engines. A split collar can be placed on the engine shaft to insert the contact pin in or the pin can be inserted in the sector-shaped counterbalance to the crank and connecting rod. This method has given satisfaction.

Conclusions from investigations point to an installation that might be classed as ideal containing the following important features: The valve for shutting off steam should be rigidly fixed to a shaft that will close the valve when rotated; the acuating force for closing should be gravity with the aid of the current of steam flowing into the cylinder. The static force, which when released actuates the valve, should be released by opening a confining lock and the static force, which when released opens the lock should be gravity and released by breaking a feeding circuit for energizing a magnetic coil. Centrifugal force should be the actuating agency for releasing the lock by direct application or by breaking the circuit that energizes a magnetic coil, permitting gravity to open it. The agency acuated by centrifugal force could be either a flyball governor, adjusted by a spring or gravity to speed requirements, or a contact pin adjusted by a spring.

Any arrangement that is intended through operation in conjunction with any parts of the regular mechanism of an engine, either for admission of steam into cylinders or controlling the admission of steam into cylinders or controlling the admission of steam to regulate speed, has somewhere a feature that breaks the chain of continuous reliability that is possessed by a properly constructed independent and automatically-operated engine stop, and in the light of experience it seemingly is but a makeshift that is not justified by saving in expenditure.

French Chemical Society

The Society of Industrial Chemistry of France is an organization, recently formed, with offices at 49 Rue des Mathurins, Paris. Previous to the outbreak of the war, France like America, depended to a great extent on German laboratories and German chemists. French chemists are now at work filling the gap caused by the cessation of German imports. In order to encourage their efforts various prominent chemists, among whom is Paul Kestner, have established a chemical society. The society expects to publish in its journal, *Chimie et Industrie*, papers by members reporting discoveries and investigations which will aid in the progress of French industry.

The reasons for the formation of the society are best expressed in the words of Albin Haller in the first issue of the journal: "The attention which has been called all over the world to the part which science is going to play in the economic battle will incite all peoples to the development at home of a knowledge of pure science and its applications, and it will be to the nation which is best armed scientifically that will belong the economic victory. We still maintain the statement which we made in 1893, and again in 1900, in our reports of the expositions at Chicago and Paris: The progressive development of industry follows along parallel lines with that of science, and the nations where the intellectual production is the most intense and is best utilized are those which will finish by having the industrial supremacy."

Paul Kestner has been elected president of the society and Albin Haller and Henry Le Chatelier are honorary presidents. Other distinguished members are Ernest Solvay, G. Charpy and G. Baumé.

More By-Product Coke Than Beehive Soon

The ouput of by-product coke soon will exceed that of the beehive ovens, according to a discussion before the American Society of Mechanical Engineers at its spring meeting at Worcester, Mass., June 4-7, by W. H. Blauvelt, consulting engineer, U. S. fuel administration, Washington. The preliminary government estimates place the total coke production for 1917 at 56,000,000 tons, the largest in the history of the industry. Of this total 34,000,000 tons, or 60 per cent was beehive coke, and 22,600,000 tons, or 40 per cent was by-product coke.

This ratio, however, is likely to be reversed before long, for according to Mr. Blauvelt, the by-product plants now under construction in the United States will have a capacity of 13,800,000 tons. As a majority of these plants will be in operation this year, it seems safe, he says, to prophesy that at some time during the latter part of the year the production of by-product coke will pass the beehive oven output. The total capacity of the by-product ovens in the country now in operation or under construction will be about 40,600,000 tons annually. This is more than 5,000,000 tons above the maximum production of the beehive ovens reached in 1916, when all of the conditions were favorable to bringing out the greatest possible production from the beehive plants.

British Prices Being Readjusted

Ministry of Munitions Grants Increase of $4.80 for Marked Bars While Blast Furnaces Are Allowed 60 Cents More Per Ton—Farm Implement Business Booming—Coal Shortage More Serious

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Aug. 20.

PRICE adjustments are gradually being made in the finished iron and steel market, the latest to be announced by the ministry of munitions being a rise of £1 ($4.80) in marked bars, the new price retroactive to Aug. 1. The effect of this will be to make the basis price £17 ($81.60), while the extras have been increased by 100 per cent.

It is significant of the change in the relation between marked and unmarked iron that the advance in unmarked bars should have been first declared. Formerly, marked bars ruled the market, and the dealers in unmarked bars followed the lead of the marked bar department. Nobody complains of the reversal in view of the fact that there are only three or four houses, although of great importance and reputation, which now make marked bars.

This is the twelfth advance in marked bars during the war. The pre-war price was £8 10s ($40.80), just half the present figure, but the old-established custom of allowing 2½ per cent discount has been abolished, so that the advance is greater than it appears. Another important change is that the price is f.o.b. at makers' works, the buyer having to bear the cost of carriage. The present advance carries the price of marked bars to a figure £1 ($4.80) in advance of the boom price of 1875, when the enormous demand for British iron which followed the Franco-German war sent the market up to unprecedented heights.

Expect Puddled Bars to Be Raised

Everyone expects that puddled bars will be next advanced. The position is anomalous, as the raw material from which bars are rolled is unchanged in price while the finished article is advanced £17 6s ($84.20). The price of strip, both iron and steel, steel billets, sheet bars and wire rods have yet to be fixed, but it is understood that the new prices will be announced soon.

The advance in price has not in the least affected demand. The government now takes all the marked iron for high-class machinery, engineering work, chains and cables and agricultural implements. Under the last head the demand, owing to the extension of farming, is in a state of boom, all manufacturers being as busy as they can be. The price of black corrugated sheets remains at £17 ($81.60) but a rise is looked for. The supply of raw steel is somewhat better and a great deal more half-finished material could be used if it was available.

Orders continue abundant; indeed the volume is considered by many representative works to be greater than at any time during the war. There is a disposition on the part of the recruiting authorities to restrain their energies so far as the enrollment of ironworkers is concerned in view of the great necessity for war material.

Little Advance for Smelters

Smelters have had a little surprise in the concession by the ministry of munitions of an addition of 2s 6d (60c) per ton in the price of special irons, retroactive to Aug. 1. This applies to Derbyshire and Northampton material and it is concluded that other districts will be placed on the same footing. The new price will raise Derbyshire gray forge from 95s ($22.80) to 97s 6d ($23.40) and No. 3 foundry from 97s 6d $(23.40) to 100s ($24) per ton. The advance applies to irons of all numbers, described as "special," that is subject to analysis and having a fixed minimum of sulphur. The increasing demand for sale to analysis has brought many irons formerly in the general class into the special category. The advance is puzzling to many in the trade in view of the obvious inadequacy of a rise of 2s 6d (60c) to meet the large increase in fuel cost. The smelter looks to be reimbursed by an increased subsidy and he is wondering why this little gift has been made to him.

The demand for pig irons of all sorts, especially the best class, for aircraft engines and superior castings continually increases and can hardly be met. More basic iron is being bought by the Sheffield steel firms. Apparently the shortage of hematite is not quite so pronounced as it was. The general demand for all kinds of pig iron is decidedly in excess of the supply.

The effect of the coal scarcity becomes more manifest in all branches of the iron and steel trades, the Midland districts suffering the most. The situation is causing grave concern to blast furnace managers whose small stocks are nearly exhausted. The practice is to keep large fuel reserves as a precaution against pit stoppages and transit delays but at some furnaces there is now only a few hour's supply. There must be some damping down of furnaces or reducing to slack blast before the trouble is relieved.

The authorities now realize the serious error they made in the last withdrawal of 25,000 men from the pits. Apparently the solution of the problem will be found in the arrival of American soldiers in France, enabling large numbers of miners to be brought back. This means that there will be an end of recruiting at the pits, and if great household economy is exercised it may be found possible to keep the various establishments going. A most drastic program of coal rationing has been imposed on the household consumer.

Obituaries

Frank Herbert Davis, for 30 years a manufacturer of paper mill machinery in Cambridge, Mass., died at a hospital in that city, Aug. 30, following an operation, aged 55 years.

Frank Toepfer, who with his father, the late Wenzel Toepfer, established the W. Toepfer & Son iron works, 80 Menomonee street, Milwaukee, died Aug. 30 of heart failure. Mr. Toepfer was 69 years old and had been in ill health for several years.

John Paul Jones, who was a member of the firm of P. Blaisdell & Co., Worcester, Mass., manufacturers of machinists' tools, until they went out of business several years ago, died at his home in that city Aug. 30, aged 79 years.

Edward Burgess, vice president of the Atlas Crucible Steel Co., Dunkirk, N. Y., died at his home there after a short illness. He founded this plant about 10 years ago. Prior to that time, Mr. Burgess was connected with the Titusville Crucible Steel Works, Titusville, Pa.

Priority in War Industry

Second Installment

Machinery of Priority

How It Is Organized — How It Functions

Granting of Certificates is Outlined

BY C. J. STARK

Editor, The Iron Trade Review

PRIORITIES are administered through the priorities division of the war industries board. The system in its present effective form, and as now constituted, virtually dates only from March 4. The enactment of the Overman bill giving the President more specific power in the management of the war, was an important factor in putting the priorities system on its present basis. The Overman bill gave to the President the authority to transfer the duties, funds, records, etc., of any one governmental department to another in the interest of a more centralized and efficient administration of war matters. Under the authority of the Overman bill, the President on March 4 delegated to the chairman of the war industries board such extended powers as advanced that body to the status of an administrative arm of the government. Up to that time, the board had been a part of the organization created by the council of national defense, a purely voluntary body of American business men banded together to advance the nation's cause of war. It possessed no governmental standing or authority.

In conferring on Chairman Baruch, these wider powers of administration, the purpose of the President was not only the centralization of control over war industry, but likewise the focusing of responsibility for carrying out the functions of the board. The President summarized the duties of the chairman, as the "general eye of all supply departments in the field of industry." It was stipulated that the chairman "(1) should act for the joint and several benefit of the supply departments of the government; (2) let alone what is being successfully done and interfere as little as possible with the present normal progresses of purchase and delivery in the several departments; (3) guide and assist wherever necessary, as in the allocation of contracts, in obtaining access to materials in any way preempted or in a disclosure of sources of supply; (4) determine what is to be done when there is any competitive or conflicting interest between departments in the matter of supply, as where there is not a sufficient immediate supply for all, or where there is competition for the same source of manufacture or supply, or where contracts have not been placed so as to get advantage of the full productive capacity; (5) see that contracts and deliveries are followed up where such assistance is necessary; (6) anticipate the prospective needs of the several supply departments of the government and their feasible adjustments to general industry so far in advance as possible in order that the business men of the country may be given as definite an outlook and opportunity for planning as possible."

How To Get Steel

Issued By Steel Director

IN regard to obtaining steel, the procedure is as follows:

FIRST: Priority certificate.

SECOND: After filling orders covered by priority, manufacturers may ship on orders required for purposes entitled to preference treatment outlined in the resolution of June 6 of the war industries board.

THIRD: If you cannot classify yourself under the preferential purpose list, you are required to notify your source of supply to make application to us for shipment, said producer giving us the name of the purchaser, tonnage, product, and purpose for which it is to be used, stating at the same time that the manufacture and shipment will not interfere with orders in his possession belonging to Class 1 and 2. Said application will be submitted to the director of steel supply, who will either grant or refuse same. You will then be notified by the producer what procedure has been taken in regard to the application.

Creates Priorities Board

Chairman Baruch of the war industries board, then by virtue of authority given him by the President, created the priorities board. This board which was created at the suggestion of the President, is composed of representatives of those branches of the government which are primarily concerned with war industry and supplies.

The priorities board as at present, is made up of 11 members, as follows: (1) the chairman of the war industries board, (2) the priorities commissioner, (3) a member of the railroad administration, (4) a member of the United States shipping board and Emergency Fleet corporation, (5) a member of the war trade board, (6) a member of the food administration, (7) a member of the fuel administration, (8) a representative of the war department, (9) a representative of the navy department, (10) a member of the allied purchasing commission, and (11) a representative of the labor administration.

The priorities board lays down such general principles and defines such basic rules to govern priorities of production and deliveries of materials, equipment and supplies as shall accord with the broader policies cover-

ing general war industry adopted by the war industries board. In other words, it determines the general policies of priority. The priorities board handles priorities on export shipments and works closely with the war trade board so that when an export license shall be granted by the latter, the material at the same time shall receive a priority footing. It is pointed out the make-up of the board, as the President desired, insures "common, consistent and concerted action" in carrying out its policies and decisions. The priorities committee which had previously existed when the war industries board filled a purely advisory capacity, was continued at the President's suggestion and now supplements the priorities board. The priorities committee administers the system of priority in accordance with the general policies and basic rules laid down by the priorities board. The commissioner of the priorities board is ex-official chairman of the priorities committee and is the link between the board and the committee or between policy and performance. The priorities commissioner also is a member of the war industries board.

The priorities board meets perhaps once a week; the priorities committee is in session daily. There are at present, 13 members of the priorities committee. Each member is a specializing member in that he handles the applications for priority certificates in a certain line. One member, of instances gives his attention to applications involving purposes in which iron and steel are involved; another, to applications involving tin; a third, to railroad supplies and equipment; another to the requirements of the navy, etc. These specializing members are chosen as a result of their practical knowledge or experience in certain lines of industry or demand. They consider and investigate the applications in their respective lines and after consideration of all the circumstances, give such priority rating as they consider is justified or necessary. In making these ratings, the specializing members act on such data and information as has been collected and made available for their advice through other sections of the war industries board. They especially are concerned by the actions taken by the conservation section which seeks to effect economies in the use of material and supplies by restricting output through reducing it to essentials, by eliminating duplication, by limiting the varieties and styles of products, etc. The priority ratings given by the specializing members to individual applications come up at the meetings of

P. C. FORM No. 11 No.....
(For use of Committee)

APPLICATION for PRIORITY CERTIFICATE

Date.....

To The PRIORITIES COMMITTEE,
Washington, D. C.

The undersigned hereby requests issuance of a PRIORITY CERTIFICATE for the reasons stated below, and in conformity with the provisions of Priorities Committee Circular No. 3, dated January 1, 1918.

INSTRUCTIONS AND DEFINITIONS.

1. Priorities Committee Circular No. 3 should be carefully read before preparing this application.

2. A separate application blank must be filled out for each case presented; use typewriter when possible; each order on the "person" referred to in paragraph No. 1, below, will be considered as a separate case.

3. The word "persons" as used herein includes any individual, firm, association or corporation.

4. The word "order" includes contract or agreement (singular or plural).

5. The word "applicant" means the person in whose immediate behalf priority is requested, i. e., the first person who is to use the material, etc., covered by this application.

6. The term "original order" refers to the order toward the completion of which the materials, etc., covered by this application are ultimately desired.

7. The term "original contractor" refers to the person who placed the original order.

8. The term "Government" includes the United States Government and the Allied Governments.

9. If applicant is an officer or department of the Government, paragraphs 6, 9, and 10, below, should be disregarded.

10. No application (other than by an officer of the Government) will be considered unless it is first properly sworn to by the applicant.

1—Insert here name and address of person who is to supply the material, etc., or perform the work described in paragraph 5 below. This is the person on which certificate is desired.	Name Address
2—Insert here name and address of applicant.	Name Address
3—State here number and date of order placed with person named in paragraph 1 above, for which priority is desired and date delivery is promised and desired, respectively.	Number of order Date of order Date delivery desired Date delivery promised
4—If order was placed by other than the applicant named in paragraph 2, above, insert here name and address of person who did place the order.	Name Address
5—Insert here particulars of order on which priority is desired, viz: Quantity and description of material; or amount and description of work. Where details are too numerous to list in this space, attach complete list in quadruplicate, typed on paper 8½x11 inches.	
6—List here the numbers, ratings, and subject matters of priority certificates (if any) under which theh applicant is working and for which the material, etc., described in paragraph 5, is needed.	
7—If material or work described in paragraph 5 is ultimately destined to fill one or more Government or original orders, insert name of Government Department or of original contractor and number and date of orders.	
8—State fully why priority is desired and what effort, if any, has ben made to secure delivery without priority assistance. If full statements can not be contained in this space use separate sheet 8½x11 inches. The above must include a statement that no part of the material, etc., for which priority is asked, has been shipped.	
9—(a) Has applicant the plant equipment necessary and now available to execute all orders upon which he is now engaged?	(a)
(b) What per cent of applicant's plant output is now devoted to Government orders†	(b)
10—If applicant has not the plant and equipment adequate to execute all orders upon which he is now engaged, what plant extensions or additional equipment are necessary?	

The undersigned being first duly sworn on oath says that the statements contained in the foregoing application are full, true, and correct; that the quantities are accurately stated and that all articles, material, nd work described in paragraph 5 hereof are intended for use in and necessary for the completion of the order(s) concerning which this application is made.

Subscribed and sworn to before me this.....

day of ....., 1918.

.....
(To be signed by applicant)

.....
(Notary Public)

in and for.....

By .....
(Name of officer legally empowered to act for applicant)

the priority committee and are referred for final consideration to a rating committee composed of three members. This committee acts as an umpire in passing on the priority ratings given by the specializing members. Should any lack of agreement arise over action of the rating committee in acting on ratings given by the specializing members, these questions are considered by the priorities committee as a whole. After the rating given by the specializing member is finally approved by the rating committee, the priority certificate is issued to the applicant; if it is not approved as rated by the specializing members, it may be rerated by the rating committee or rejected.

Because of its basic importance in war industry, steel or the manufactured products into which steel enters, furnish the great majority of the requests for priority certificate made to the priorities committee. Since the priority system was put into effect, approximately 165,000 individual applications for priorities certificates on all kinds of materials or supplies but chiefly on steel and manufactures of steel, have been filed. The number of certificates actually granted by the priorities committee, perhaps represent three-fourths of this total. The remaining quarter either was rejected or was shown to be under no necessity of priority assistance in carrying out its work. With the advent of the automatic priority classification which was announced by the priorities board in July, the operations of the machinery of allowing priority have been greatly faciliated and supplemented. Under the automatic classification, the user of the material or supplies gives a rating himself to his requirements subject to clearly prescribed rules issued by the priorities board. It is required that the user so rating his own needs shall pledge by an accompanying affidavit that the materials, equipment or supplies required are to be used for the purpose, entitled to automatic priority and for no other. Where the order has been placed by the war or navy departments or by the Emergency Fleet corporation, it is required before it is entitled to automatic priority standing that the purchasing officer shall place a prescribed endorsement upon it. These automatic classifications have been so carefully based upon a study of the operations of the system over a period of months, that they are taking care of the majority of the cases where formerly applications for a priority certificate was made at Washington. This was the object sought when the automatic plan of rating was conceived and put into effect.

July Exports Show Gain

Foreign Deliveries of Iron and Steel Increase Over June and July 1917—Pig Iron Tonnage Still Dropping—Imports Small

SHIPMENTS of iron and steel products to foreign countries, which fell off considerably in June, recovered somewhat in July, and although the total was not up to the average for the year, it was well over the figure for July a year ago. Figures just issued by the bureau of foreign and domestic commerce indicate that exports of these commodities amounted to 452,759 tons, 34,154 tons above the June total of 418,605 tons, and a gain of 106,366 tons compared with July, 1917. As July has been an off month for the past two or three years, this gain is more noticeable.

Very little change is noted in the shipments of pig iron and semi-finished material. The July pig iron total was 20,265 tons, 2631 tons less than the June total of 22,896 tons. Compared with July a year ago, however, the loss was 12,040 tons. Semi-finished material shipments for July and June were almost identical, the figures being 139,612 tons and 139,377 tons, respectively; while July, 1917, showed a tonnage of only 106,085 tons. Scrap exports which fell to 318 tons in June, entirely disappeared in July and no tonnage is reported for that month. Substantial increases were shown in exports of steel bars, sheets and plates and pipes and fittings, all of which are being used extensively in war work.

Iron and steel imports were only slightly above the low record which was set in April of this year. Total receipts at our ports in July fell to 11,511 tons, compared with 13,913 tons in June, a loss of 2402 tons, and 28,859 tons in July a year ago, a loss of 17,348 tons. Scrap and semifinished material imports continue at the low rate which has been noted for some months past.

Iron ore imports for the month of July amounted to 118,875 tons. This is more than double the June total of 58,825 tons, and an increase of 29,146 tons compared with July a year ago, when 89,729 tons of iron ore were received in this country.

IRON ORE IMPORTS, GROSS TONS

	July 1918	July 1917
Spain	8,277	.....
Sweden	.....	6,358
Canada	22,693	35,221
Cuba	86,905	48,150
Other countries	1,000	.....
Total	118,875	89,729

IRON AND STEEL IMPORTS

	July 1918	July 1917
Pig iron	4,305	5,672
Scrap	2,685	13,107
Bar iron	97	968
Ingots, blooms and billets	3,711	6,974
Structural shaoes	8	1,128
Rails	539	579
Sheets and plates	61	263
Tin and terne plate	.....	.....
Wire rods	105	168
Total	11,511	28,859

EXPORTS, GROSS TONS

1916	Pig iron	Semi-finished material
Jan.	19,319	55,315
Feb.	15,061	87,406
Mar.	19,439	107,674
Apr.	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
Aug.	60,264	160,921
Sep.	64,122	163,104
Oct.	92,756	162,669
Nov.	106,781	120,883
Dec.	105,195	162,901
1917		
Jan.	69,146	183,656
Feb.	49,018	131,566
Mar.	69,629	193,469
Apr.	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
Aug.	62,083	189,083
Sep.	44,287	148,932
Oct.	47,200	204,724
Nov.	25,733	150,120
Dec.	66,573	204,555
1918		
Jan.	20,581	195,385
Feb.	10,540	173,272
Mar.	9,849	144,443
Apr.	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612

IRON AND STEEL EXPORTS, GROSS TONS

	July 1918	July 1917
Scrap	.....	3,264
Pig iron	20,265	32,305
Steel billets, ingots and blooms	139,612	106,085
Wire rods	11,045	8,503
Steel rails	27,358	20,647
Steel bars	42,840	32,108
Iron bars	3,527	3,438
Struct. iron and steel	19,215	14,611
Hoops, bands and scroll	5,134	5,091
Sheets and plates	81,035	49,229
Tin and terne plate	28,811	16,709
Barbed wire	27,644	14,543
All other wire	15,892	12,881
Cut nails	195	197
Wire nails	7,688	7,305
All other nails, inc. tools	1,404	912
Pipes and fittings	17,710	14,103
R. R. spikes	702	1,015
Bolts, nuts, rivets and washers	2,346	2,833
Horseshoes	109	153
Cast radiators	227	461
Total	452,759	346,393

Essential Industry List Extended

War Industries Board Issues Elaborated Classification of Industries and Plants Entitled to Preference Treatment—New List Supersedes Preference List No. 1 and is Master Key Governing Supply of Basic Needs

WASHINGTON, Sept. 10.—A new and elaborated classification of industries and plants essential to the prosecution of the war and to public needs has been officially issued by the war industries board. The new classification is known as Preference List No. 2 and supersedes Preference List No. 1 issued April 6, 1918, and all supplements and amendments thereto. The new list is issued over the signatures of Edward B. Parker, priorities commissioner, and Bernard M. Baruch, chairman of the war industries board, and is effective as of Sept. 3.

The list of essential industries is described "as the masterkey governing the flow of basic industrial elements to the industries essential to the war program." These basic elements are labor, capital, facilities, material, transportation and fuel. In making the new classification which is much more extended and comprehensive than the original preference list, the war industries board is carrying out its recently announced intention to more specifically rank the various industries in accordance with the indispensable services they are now performing. Under the priority regulations of the supply and distribution of raw materials, semifinished products and finished products as governed by circular No. 4 issued by priorities division July 1, 1918, it will be noted that the preference list is made the basis for the classification of C work, inasmuch as all orders and work placed by or to be utilized in connection with industries or plants appearing on the preference list shall take that classification as a basis. These orders or work, however, are subject to superseding priority ratings which may advance them to the higher classes of B, A, or AA in accordance with the purpose to which they are to be put.

Baruch Makes Statement

Chairman Baruch of the war industries board in announcing the new preference list makes the following statement:

"The list herewith presented is the master key governing the flow of basic industrial elements to the industries essential to the war program. It supersedes all previous listing.

"It is the basis for industrial exemption from the draft and may be regarded as the governing factor in the distribution of labor, capital, facilities, material, transportation and fuel.

"The priorities division has grouped major industries according to their relative importance into four great classes, consideration being given in this grouping to these factors: (1) intrinsic importance of the product for use during the war and the urgency; (2) necessity for maintaining or stimulating and increasing the total quantity of production; (3) proportion of the capacity of the industry or plant devoted to the production of essential products. Each industry or plant is given a class number.

"Judge E. B. Parker, chairman of the priorities division, states the determination of the relative importance of all industries and plants for both production and delivery by a single agency, the war industries board, renders it possible to maintain a well balanced program with respect to the several factors entering into production, which includes, among other things, plant facilities, fuel supply or electrical energy, labor and transportation without all of which production is impossible.

"Where it is imperative not only to maintain but to stimulate and increase production to supply abnormal demands created by war requirements, a high rating is necessary even though the intrinsic importance of the product may be less than that of other products placed in the lower classification, due to the fact that the supply of such other products equals the demand without the stimulus of high priority. Certain plants produce commodities of more relative importance, but at the same time produce other commodities of less relative importance, and under such circumstances consideration and weight is given to the ratio of production between the more important and less important commodities.

"The inclusion of the industries and plants on this preference list does not operate as an embargo against all others, but the effect is to defer the requirements of all other industries and plants until the requirements of those on the preference list shall have been satisfied. The paramount purpose of priorities is the selective mobilization of the products of the soil, the mines and the factories for direct and indirect war needs in such a way as will most effectually contribute toward winning the war.

"In listing industries as such or individual plants, while a number of factors are taken into account, the ultimate test is: To what extent, if at all, will according preference contribute directly or indirectly toward winning the war; and, if at all, how urgent is the need?

"A high priority classification does not always mean that the product of the industry of plant so classified is of greater intrinsic importance than those of industries and plants in a lower classification or not appearing at all on the preference list, but that taking into account the urgency of the demand and the relation of supply to demand, it is in the public interest that the artificial stimulus of priority should be applied. All priority is relative and implies purposeful discrimination."

Judge Parker Explains

A further explanatory statement by Judge Parker is as follows:

"For the guidance of all governmental agencies and all others interested in (1) the production and supply of fuel and electric energy, (2) in the supply of labor, and (3) in the supply of transportation service by rail, water, pipe lines or otherwise, in so far as such service contributes to production of finished products, the accompanying designated PREFERENCE LIST NO. 2 has been adopted by the priorities board superseding Preference List No. 1 adopted April 6, 1918, and all amendments and supplements thereto.

"Where advisable industries as such have been classified and listed. In numerous instances individual plants have been found to be entitled to preference, although the industries to which they belong are not; and in other instances where an industry as such has been accorded a degree of preference, particular plants in such industry have been placed in a higher class. This has necessitated classifying and listing not only industries as such but to a limited extent individual plants, some of which are accorded a higher rating than that accorded the listed industry to which they belong.

"The preference list is made up of industries and plants which in the public interest are deemed entitled to preferential treatment. The inclusion of these industries and plants on this list does not operate as an embargo against all others, but the effect is to defer the requirements of all other industries and plants until the requirements of those on the preference list shall have been satisfied.

"In the compilation of this list industries and plants have been divided according to their relative importance into four classes, viz: Class I, class II, class III and class IV. In determining such relative importance consideration and weight have been given not solely to any one but to all of the following factors: (1) the *intrinsic importance* of the product itself for use during the war, and the *urgency*, as measured by time, of the demand of

the use to which it is to be put; (2) the necessity for maintaining or stimulating and increasing the total quantity of production, which in turn depends largely upon the relation of the supply to the demand for essential uses; (3) the proportion of the capacity of the industry plant which is devoted to the production of the essential product.

maintain but to stimulate and increase production to satisfy abnormal demands created by war requirements, a high rating is necessary, even though the intrinsic importance of the product may be less than that of other products placed in a lower classification due to the fact that the supply of such other products equals the demand without the stimulus of high priority. Where it is necessary to speed the production of a particular product required at a *particular time* to carry into effect an important program, a high priority is given although changing conditions may thereafter suggest and demand a reclassification. Certain plants produce commodities of great relative importance, but at the same time produce other commodities of less relative importance, and under such circumstances consideration and weight is given to the ratio of production between the more important and less important commodities. Instances occasionally arise where individual plants are given preference so long as they are rendering, and so long as it is in the public interest that they should render, a particular service, even though, taking the country as a whole, the supply of their product is ample to meet all demands.

"No distinction has been made between any of the industries or plants within any one class and no significance attaches to the order in which industries and plants are listed within any class.

"The industries and plants grouped under class I are only such as are of exceptional importance in conneection with the prosecution of the war. Their requirements must be fully satisfied in preference to those of the three remaining classes.

"Requirements of industries and plants grouped under class II, class III, and class IV shall have precedence over those not appearing on the preference list. As between these three classes, however, there shall be no complete or absolute preference. The division into classes is for the purpose of presenting a composite picture of the relative importance of the industries and plants embraced within each group. It is not intended that the requirements of class II shall be fully satisfied before supplying any of the requirements of class III, or that those of class III shall be fully satisfied before supplying any of those of class IV. The classification does, however, indicate that the industries and plants grouped in class II are relatively more important than those in class III and that those in class III are relatively more important than those in class IV. It will often happen that after satisfying the requirements of class I the remaining available supply will be less than the aggregate requirements of the other three classes, in which event such supply will be rationed to the industries and plants embraced within those classes. In determining a basis for such rationing the relative importance of each industry and plant, according to its class rating, must be considered. It has been found impracticable to prescribe for rationing purposes any general and uniform rule or formula, but the priorities board will from time to time, after conference, and in cooperation with each of the several governmental agencies charged with the distribution thereof, determine particular principles, values and methods of application which may be followed in allocating fuel, power, transportation and labor respectively, to the end that proper recognition and weight may as far as practicable in each case be given to the relative importance of class II, class III and class IV.

"Each plant listed as such shall not later than the fifteenth of each month file with the secretary of the priorities board, Washington, a report on P. L. Form No. 3 (a supply of which will be furnished on application) covering its activties during the preceding month. Any plant failing to file such report will be dropped from the preference list.

"Priorities in the supply and distribution of raw materials, semifinished products and finished products shall be governed by circular No. 4 issued by the priorities division of the war industries board under date of July 1, 1918, and all amendments and supplements thereto or substitutes therefor.

"The term principally as used in listing industries shall be construed to mean plants whose output is not less than 75 per cent of the products mentioned.

of the priorities board to meet changing conditions. The priorities commissioner shall under the direction of and with the approval of the priorities board certify additional classes of industries and also certify additional plants whose operations as a war measure entitle them to preference treatment, which industries and plants when so certified shall be automatically included in the preference list."

Alphabetical List of Industries

The industries on preference list No. 2 arranged alphabetically are as follows: (The term "principally" means 75 per cent of the products mentioned.)

	Class
AGRICULTURAL IMPLEMENTS — See Farm Implements.	
AIRCRAFT—Plants engaged principally in manufacturing aircraft or aircraft supplies and equipment	I
AMMUNITION—Plants engaged principally in manufacturing same for the United States government and the allies	I
ARMY AND NAVY—Arsenals and navy yards	I
ARMY AND NAVY—Cantonments and camps	I
ARMS (Small)—Plants engaged principally in manufacturing same for the United States government and the allies	I
BAGS—Hemp, jute and cotton—Plants engaged principally in manufacturing same	IV
BLAST FURNACES—(Producing pig iron)	I
BOOTS AND SHOES—Plants engaged exclusively in manufacturing same	IV
BRASS AND COPPER—Plants engaged principally in rolling, and drawing copper brass and other copper alloys in the form of sheets, rods, wire and tubes	II
BUILDINGS—See Public Institutions and Buildings.	
CHAIN—Plants engaged principally in manufacturing iron and steel chain	III
CHEMICALS—Plants engaged principally in manufacturing chemicals for the production of military and naval explosives, ammunition and aircraft, and use in chemical warfare	I
CHEMICALS—Plants, not otherwise classified and listed, engaged principally in manufacturing chemicals	IV
COKE—Plants engaged principally in producing metallurgical coke and by-products, including toluol	I
COKE—Plants, not otherwise classified and listed, producing same	II
COPPER AND BRASS—See Brass and Copper.	
COTTON—Plants engaged in the compression of cotton	IV
COTTON TEXTILES—See Textiles.	
CRANES—Plants engaged principally in manufacturing locomotive or travelling cranes	II
DOMESTIC CONSUMERS—Fuel and electric energy for residential consumption, including homes, apartment houses, residential flats, restaurants and hotels.	I
DOMESTIC CONSUMERS—Fuel and electric energy not otherwise specifically listed	III
DRUGS—Medicines and medical and surgical supplies—Plants engaged principally in manufacturing same	IV
ELECTRICAL EQUIPMENT—Plants engaged principally in manufacturing same	III
EXPLOSIVES—Plants engaged principally in manufacturing same for military and naval purposes for the United States government and the allies	I
EXPLOSIVES—Plants, not otherwise classified or listed, engaged principally in manufacturing same	III
FARM IMPLEMENTS—Plants engaged principally in manufacturing agricultural implements and farm operating equipment	IV
FEED—Plants engaged principally in preparing or manufacturing feed for livestock and poultry	I
FERROALLOYS—Plants engaged principally in producing ferrochrome, ferromanganese, ferromolybdenum, ferrosilicon, ferrotungsten, ferrouranium, ferrovandium and ferrozirconium	II
FERTILIZERS—Plants engaged principally in producing same	IV
FIRE BRICK—Plants engaged principally in manufacturing same	IV
FOODS—Plants engaged principally in producing, milling, refining, preserving, refrigerating, wholesaling or storing food for human consumption embraced within the following description: all cereals and cereal products, meats, including poultry, fish, vegetables, fruit, sugar, syrups, glucose, butter, eggs, cheese, milk and cream, lard, lard compounds, oleomargarine and other substitutes for butter or lard, vegetable oils, beans, salt, coffee, baking powder, soda and yeast; also ammonia for refrigeration	I
FOODS—Plants engaged principally in producing, milling, preparing, refining, preserving, refrigerating or storing food for human consumption not otherwise specifically listed. Excepting here from plants producing confectionery, soft drinks and chewing gum	III
FOOD CONTAINERS—Plants engaged principally in manufacturing same	IV
FOUNDRIES (Iron)—Plants engaged principally in the manufacture of grey iron and malleable iron castings	IV
FUNGICIDES — See Insecticides and Fungicides.	
GAS—See Oil and Gas, also Public Utilities.	
GUNS (Large)—Plants engaged principally in manufacturing same for the United States government and the allies	I
HOSPITALS—See Public Institutions and Buildings.	
ICE—Plants engaged principally in manufacturing same	III
INSECTICIDES AND FUNGICIDES—Plants engaged principally in manufacturing same	IV

LAUNDRIES IV
MACHINE TOOLS—Plants engaged principally in manufacturing same..... II
MEDICINES—See Drugs and Medicines.
MINES—Coal I
MINES—Producing metals and ferroalloy minerals II
MINES—Plants engaged principally in manufacturing mining tools or equipment III
NAVY—See Army and Navy.
NAVY DEPARTMENT—See War and Navy Departments.
NEWSPAPERS AND PERIODICALS—Plants engaged principally in printing newspapers or periodicals which are entered at the postoffice as second-class mail matter IV
OIL AND GAS—Plants engaged principally in producing oil or natural gas for fuel, or for mechanical purposes, including refining or manufacturing oil for fuel, or for mechanical purposes..... I
OIL AND GAS—Pipe lines and pumping stations engaged in transporting oil or natural gas I
OIL AND GAS—Plants engaged principally in manufacturing equipment or supplies for producing or transporting oil or natural gas, or for refining and manufacturing oil for fuel or for mechanical purposes III
PAPER AND PULP—See Pulp and Paper.
PERIODICALS—See Newspapers and Periodicals.
PUBLIC INSTITUTIONS AND BUILDINGS (Maintenance and operation of)—Other than hospitals and sanitariums.... III
PUBLIC INSTITUTIONS AND BUILDINGS (Maintenance and operation of)—Used as hospitals or sanitariums..... I
PUBLIC UTILITIES—Gas plants producing toluol I
PUBLIC UTILITIES—Street railways, electric lighting and power companies, gas plants not otherwise classified, telephone and telegraph companies, water supply companies, and like general utilities II
PUBLIC UTILITIES—Plants engaged principally in manufacturing equipment for railways or other public utilities..... II
PULP AND PAPER—Plants engaged exclusively in manufacturing same..... IV
RAILWAYS—Operated by United States Railroad Administration I
RAILWAYS—Not operated by United States Railroad Administration (excluding those operated as plant facilities)... II
RAILWAYS (Street)—See Public Utilities.
ROPE—See Twine and Rope.
ROPE WIRE—See Wire Rope.
SANITARIUMS—See Public Institutions and Buildings.
SHIPS (Maintenance and operation of)—Excluding pleasure craft not common carriers I
SHIPS—Plants engaged principally in building ships, *excluding* (a) pleasure craft not common carriers, (b) ships not built for the United States government or the allies nor under license from United States shipping board..... I
SOAP—Plants engaged principally in manufacturing same IV
STEEL-MAKING FURNACES—Plants engaged solely in manufacturing ingots and steel castings by the open hearth, bessemer, crucible or electric furnace process, including blooming mills, billet mills and slabbing mills for same..... I
STEEL PLATE MILLS..... I
STEEL RAIL MILLS—Rolling rails fifty (50) or more pounds yer yard..... II
STEEL—All plants operating steel rolling and drawing mills exclusive of those taking higher classification..... III
SURGICAL SUPPLIES—See Drugs and Medicines.
TANNERS—Plants engaged principally in tanning leather IV
TANNING—Plants engaged principally in manufacturing tanning extracts..... IV
TEXTILES—Plants engaged principally in manufacturing cotton textiles including spinning, weaving and finishing..... IV
TEXTILES—Plants engaged principally in manufacturing woolen textiles including spinners, top makers and weavers..... IV
TEXTILES—Plants engaged principally in manufacturing cotton or woolen knit goods IV
TIN PLATES—Plants engaged principally in manufacturing same III
TOBACCO—Only for preserving, drying, curing, packing, and storing same—not for manufacturing and marketing..... IV
TOLUOL—See Coke, also Public Utilities.
TOOLS—Plants engaged principally in manufacturing small or hand tools for working wood or metal..... III
TWINE (Binder and Rope)—Plants engaged principally in manufacturing same IV
WAR AND NAVY DEPARTMENTS—Construction work conducted by either the war department or the navy department of the United States in embarkation ports, harbors, fortified places, flood protection operations, docks, locks, channels, inland waterways and in the maintenance and repair of same..... II
WIRE ROPE AND ROPE WIRE—Plants engaged principally in manufacturing same II
WOOLEN TEXTILES—See Textiles.

Defense Councils to Aid in Restricting Building

Washington, Sept. 9.—As stated in last week's issue of THE IRON TRADE REVIEW a more restrictive policy as to civilian building plans has been adopted by the war industries board. The board in line with this policy has enlisted the services of the state councils of national defense to eliminate private building enterprises not predicated on war requirements. The plan as outlined in a letter by Bernard M. Baruch, chairman of the board, to Secretary Baker as president of the council of national defense, and which received the secretary's indorsement, requires that all building enterprises aside from a certain specified character shall first be approved by the state councils before approval by the war industries board. The exceptions refer to buildings required for various branches of the army and navy, industrial pursuits essential to war production and repairs or extensions to buildings not involving more than $2500.

Judge E. B. Parker, priority commissioner, is now preparing instructions for the guidance of the state councils. The state councils will check up on all contemplated buildings through local councils, and while the recommendations through this source will not be considered tantamount to final approval the recommendations will be essential to approval by the board.

New Whiteley Malleable Plant in Operation

With its capacity increased 50 per cent, the Whiteley Malleable Castings Co., Muncie, Ind., now is operating an entirely new plant. This plant, which comprises seven units occupies a site of 14 acres, and replaces the shop destroyed by fire in November, 1916. It is one of the most modern and efficiently equipped plants of its kind in the country. During the erection of the new buildings, operations were carried on almost continuously, since temporary buildings were erected immediately after the fire. The entire capacity of the new plant is engaged in the production of castings for companies which have government contracts and other important essentials.

All of the new buildings are of brick and steel construction. Unit No. 1 consists of molding, air furnaces and brass furnace building, and contains five large air and one brass and aluminum furnaces; unit No. 2 includes the annealing and grinding and soft mill and inspecting rooms; unit No. 3, the foundry supplies storehouse and "first aid" room; unit No. 4, the match parts and flasks house and millwright's department; unit No. 5, the slag mill house; unit No. 6, the core department building which is to be erected shortly, and unit No. 7, the shipping department on the first floor and the pattern department on the second floor. Complete fire and police protection is provided. Special attention has been paid to light, sanitation and ventilation.

Will Build Coal Road

The Youngstown Sheet & Tube Co. is assured an adequate supply of coal from its own mines in southwestern Pennsylvania by the recent decision of the railroad administration to build a short line to connect the mines with the Chartiers & Southern railroad, thus providing means for moving the output of the mines to Youngstown, O. The contract has been let and work is to start immediately. The line will cost approximately $1,000,000, and with the return of the railroads to private ownership after the war it will become the property of the Pittsburgh, Chartiers & Youghiougheny railroad on such basis as may be determined.

The Golding Mfg. Co., Franklin, Mass., maker of printing presses, paper cutters, printing tools and castings, has disposed of its business to a new company, of which William C. Buchanan will be the general manager.

Finds Woman Labor Meets the Need

Research in Wartime Employment Problem in Metal Trades by National Industrial Conference Board Reveals That Majority of Manufacturers Employing Women Finds Their Service Satisfactory—Excel Men in Output

EXPERIENCE of employers in the metal trades in the United States has clearly demonstrated the practicability of employing women in a large variety of manufacturing operations. This is the conclusion reached by the national industrial conference board after a thorough investigation of the wartime employment of women in such trades. The board found that in a majority of establishments included in its investigation where women were employed in the same work as men, they have equalled or excelled the lattr in respect to output.

In view of the United States employment service's estimate that from 3,000,000 to 4,000,000 skilled workers will be required in essential occupations this year, the board says there must be a far-reaching occupational readjustment which will compel the admission of more women workers in industry. In the United States the proportion of the women population now employed is approximately 8 per cent as against 26 per cent in England, and to make the number of women employed in the two countries proportionate would mean the addition of 8,152,135 women to the ranks of industry in the United States.

Attitude of Men Favorable

While the introduction of women into some occupations in this country, notably in the street car service, has resulted in strikes, their increased employment in the metal trades has been attended with "singularly little difficulty." The majority of manufacturers questioned by the board reported that the attitude of their men employes was either indifferent or favorable to the employment of women. Opinions of manufacturers were as a rule favorable to their employment and the majority reported that the attitude of women employes toward their work was as good or better than that of the men. Summarizing other features of its investigation the board reports:

In some processes the superiority of women is marked. As a rule, however, they have not been employed on highly skilled work and it is on light repetitive work requiring little experience or initiative that they have made their best record. Nevertheless, it cannot fairly be concluded from available evidence that women are unfitted for highly skilled operations, since, in this country at least, they have had no adequate test of their ability. In Great Britain women have proved themselves efficient in some skilled operations. It is the concensus of opinion that women should not be employed on heavy work, or on machinery where the accident hazard is distinctly high, or on work where extreme temperatures, poisonous fumes or other serious health hazards are involved.

The principle of equal wages for equal work has found fairly general acceptance among employers in the metal trades. Systematic and intensive training of women workers, subdivision of operations, adaptation of equipment, organization in small groups under intelligent supervisors, and adequate compensation under the piece-rate system contribute effectively to maximum production in establishments where women are employed.

For the training of women, chief reliance has been placed on practical instruction in the factory. It is important that such training be conducted by fair-minded supervisors who have no prejudice against the employment of women in new occupations.

Women are found to be somewhat less regular in attendance at their work than men. Labor turnover thus far has been lower, but it is by no means certain that this can be regarded as a permanent condition. The attitude of women frequently is reported as more receptive, steadier, and more conscientious than that of new men workers at present available.

The proportion of accidents apparently is lower among women than among men in the establishments covered by this investigation, due partly to emphasis placed on safety instructions and increased safeguarding of machinery, but especially to employment in the less hazardous occupations.

Substitution of women for men in the metal trades has not yet been extensive. In the establishments represented in this investigation women thus far have been chiefly drawn from other industrial occupations rather than from the ranks of those previously unemployed. It is probable, however, that an increasing number will be secured from the latter source if the available supply of men continues to decrease as the result of the war.

Production Compared

As to the output and efficiency of women, two-thirds of the number of manufacturers questioned by the board reported that women's production was equal to or greater than that of men in the operations on which both were employed. In 44 of 115 establishments the attendance of women employes was better than that of men; in 40 equal and in 31 worse. On the basis of the number of women employed, however, the showing is different since the establishments where women's attendance was worse than that of men included 18,045 workers as against 10,481 in those establishments where their attendance was better, and 9974 in establishments where it was equal. Although poor attendance was frequently a disadvantage connected with women's employment the greater stabiliyt of woman labor offered some compensation.

Censors Labor Ads

Warnings have been sent out by Charles D. Barnes, federal state superintendent of the United States employment service for the state of New York, that advertisements for workers must be worded in strict conformity with the government's rules. Numerous employers of labor already have been found guilty of violating these rules. In dealing with these cases, the employment service generally presumes that the first violation is unintentional, and the offending advertiser merely is notified of his error. The second violation is regarded as a serious offense, and the culpable firm receives warning that revocation of its license to advertise may follow. In several instances second offenses have been recorded.

One company in this district a few days ago ran an advertisement in the "Help Wanted' columns of the newspapers, offering to machinists, the "highest prevailing wages; plenty of overtime; 10 per cent bonus." This advertisement was found to be a plain violation of the provision prohibiting the offering of special inducements. Another offending firm advertised for a "Boy, 16 years old, at $8 salary." Another company advertised for messenger boys as follows, "Good salary; time and a half for overtime; cafeteria with best food at cost prices." All these advertisements were objected to as offering special inducements.

Lower Freights

On Iron and Steel To East May Be Lost to Pittsburgh

New York, Sept. 10.—The lower freight rates which iron and steelmakers in the Pittsburgh district for many years have enjoyed on shipments to the east are to be recalled and replaced by higher rates, if an application which recently was filed by the eastern railroads is allowed. Little doubt is expressed that permission to increase the rates will be granted by the interstate commerce commission, since the legitimacy of the higher rates was substantiated in a recent decision. This was in the complaint of the Pollak Steel Co. that there was discrimination in freight rates on iron and steel shipments to the east, in favor of the Pittsburgh district and against Chicago, Cincinnati and other western points. The decision in this case pointed out that the Pittsburgh district enjoys lower rates on iron and steel shipments to the east than it is entitled to; in other words, these rates do not bear a proper relation to the rates from Chicago and other western points, to the east. It is on this decision that the present application for higher rates from Pittsburgh to the east is based, and it is believed in well informed quarters, that the increased rates will become effective on or about Nov. 1.

Underlying this development is an interesting chapter of iron and steel market history which dates back to 1901, when the competition of Buffalo mills had become keenly felt by Pittsburgh district producers. Rates on iron and steel shipments from Pittsburgh to the east in those days were considerably higher than those from Pittsburgh to the east, and as a result of earnest representations by leaders in the Pittsburgh industry, the railroads were prevailed upon to reduce the freight rates in order to place Pittsburgh on a parity with Buffalo. This reduction in the Pittsburgh rates was granted in February, 1901, and ever since that date producers in the two districts have been on an equal basis as far as railroad freight rates to the east are concerned.

Concessions which were granted in 1901, applied only to the iron and steel freight rates and were not extended to any other commodities. Hence, rates on iron and steel from Pittsburgh to the east ever since that time have been lower than the general schedule of freight rates, both with regard to rates from all other districts and on all other commodities. In the application of the railroads, it is requested that the present rates from Pittsburgh to the east be increased to 60 per cent of the prevailing rates from Chicago. Present rates from Chicago to New York are $7.20 per gross ton on pig iron, $7.50 per gross ton on billets and 45 cents per 100 pounds on plates, shapes and bars. On the basis of 60 per cent of these rates, the new rates from Pittsburgh to New York will be $4.30 per gross ton on pig iron, $4.50 per gross ton on billets, and 27 cents per 100 pounds on plates, shapes and bars. The present rates from Pittsburgh to New York are $3.90 per gross ton on pig iron, $4 per gross ton on billets and 24.5 cents per 100 pounds on plates, shapes and bars. If these rates are allowed, Buffalo shippers will enjoy an advantage in carload lots of 40 cents per gross ton on pig iron, 50 cents per gross ton on billets, and 2.5 cents per 100 pounds on plates, shapes and bars shipped to New York. Less carload rates will be advanced accordingly.

Stop Making Fords

Detroit Plant Devoted Exclusively To War Production

Detroit, Mich., Sept. 10.—The entire plant of the Ford Motor Co., covering approximately 100 acres has been placed at the disposal of the government for war work exclusively. Henry Ford announced today that the manufacture of pleasure cars has been discontinued for the duration of the war. When the production of these cars was stopped the plant was turning out about 500 a day, compared with 3000 a day before the United States entered the war. The plant is now devoted to making machined parts for the ordnance department and is preparing to produce small, two-man tanks. The Ford Motor Co., of Canada, Ltd., in Ford City, Ont., across the river from Detroit, has placed in effect a $5 a day wage scale for its 2500 employes in the Dominion.

Henry Ford's $2,000,000 tractor plant on the banks of the Miami river at Hamilton, O., will be the first of a chain of such factories throughout the country, all of which will utilize water power, according to announcement made here. The motor manufacturer's plan is to make use of the water power resources of the country in his development of the tractor, which at the same time it is hoped will aid in the industrial development of small communities. The Hamilton plant will develop from 4000 to 5000 horsepower.

Full Control

Over Iron and Steel Orders Taken By Canadian Government

Toronto, Ont., Sept. 7.—A radical step has been taken by the Dominion government to insure adequate production and proper distribution of iron and steel raw materials in Canada to meet war and industrial needs. An order-in-council has been passed empowering the war trade board to coordinate the manufacturing resources of Canadian iron and steel factories and to distribute orders among them according to their respective capacities. The war trade board will exercise supervision over the iron and steel industry analogous to that exercised by the railway war board over the railways. Each company will retain its corporate entity and attend to its own financial arrangements and management as heretofore, but the flow of orders will be regulated by the board to prevent congestion at some plants and to obtain the maximum output from others.

At a recent meeting of the Canadian cabinet in Ottawa the matter of war orders coming to Canadian manufacturers from the United States was discussed. Lloyd Havins, chairman of the Canadian war mission at Washington, gave details as to American requirements which might be met in Canada. A subcommittee of the cabinet was appointed to confer with him and the war trade board to make arrangements between the Canadian and American governments for apportioning raw materials and securing uniformity of contract prices. It was stated that prices paid in the United States are higher than prices paid by the imperial munitions board, and that many Canadian manufacturers have been securing American orders because they yield greater profits.

Manganese from Mexico

It is stated by mining men from Mexico that there is much activity in developing manganese claims in that country, particularly in the state of Chihuahua. At some of these properties considerable quantities of ore have been accumulated and shipments will be made to the United States as soon as the transportation and exporting arrangements can be made. For a long time it has been known that extensive beds of manganese ore existed in Chihuahua and claims are made that the present large demand and high price has caused them to become of much commercial importance.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

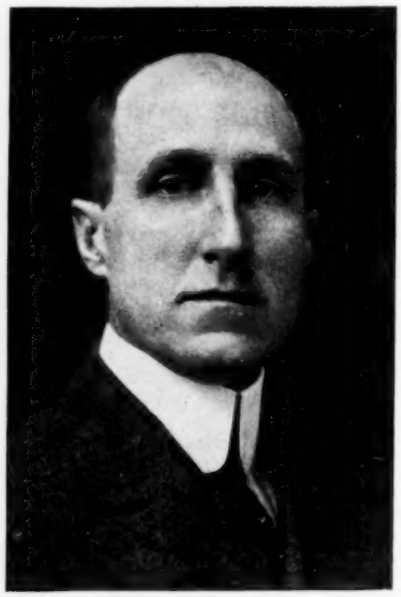
THOMAS W. KENNEDY, has retired as president and general manager of the Adrian Furnace Co., operating furnaces at Du Bois and Punxsutawney, Pa. It is stated that Mr. Kennedy has taken this action to permit him to take a complete rest for a year in the interest of his health. He became head of the Adrian company when it was organized 14 years ago and located in Du Bois shortly after to build and operate the furnace plant there. About eight years ago his company purchased the Rogers-Brown interests in the Punxsutawney Furnace Co., and under Mr. Kennedy's management both plants have expanded and developed, the Du Bois furnace now is producing 250 tons of pig iron daily. Mr. Kennedy has been succeeded by Frank G. St. Claire, vice president of the company who will supervise both plants.

Walter D. Sayle, president of the Cleveland Punch & Shear Works Co., Cleveland, has resigned as Cuyahoga county fuel administrator and has been succeeded by Munson Havens, secretary of the Cleveland chamber of commerce.

Harry L. Barnitz, former sales agent at New York for the International Oxygen Co., is now conducting a business under his own name at 617 West 152nd street, New York. He is a consulting engineer on oxygen and hydrogen, plant installation and technical processes for their uses.

J. H. Rodger has been made acting vice president of the Safety Car Heating and Lighting Co., of Chicago, to succeed A. Clark Moore, who has been given a leave of absence for the duration of the war. Mr. Moore will be in charge of aircraft production in the New York district.

William M. Bailey, recently connected with the Federal Shipbuilding Co., Kearny, N. J., has become vice president of Fulton Steel Corp., New York city. In his new capacity, Mr. Bailey will be located at Fulton, N. Y., where he will be in entire charge of the company's property. The Fulton Steel Corp. was organized last year and started the production of high speed steel in February of this year. One electric furnace has been in operation since that time and another was purchased recently and will be in operation soon. Prior to his connection with the Federal Shipbuilding Co. Mr. Bailey was secretary to the president of the Carnegie Steel Co. and later held a similar position with the Midvale Steel Co., subsequently becoming assistant to the president of the Midvale Steel & Ordnance Co.



THOMAS W. KENNEDY

Capt. Arthur B. Roberts of Cleveland, has been promoted to the rank of major. Maj. Roberts, who was a consulting engineer for the American Shipbuilding Co., Upson Nut Co. and other Cleveland concerns, is in charge of construction work at the Aberdeen, Md., proving ground.

Thomas N. Perkins and G. H. Dorr have been appointed by Director of Munitions Benedict Crowell, to serve as his assistants. Mr. Perkins was appointed counsel to the war industries board in October, 1917. Last fall he served as a member of that board's priorities committee and then became assistant to Surveyor General of Supplies Stettinius. Mr. Dorr was formerly assistant United States attorney for the southern district of New York, but between August and December, 1917, was connected with the war trade board. Since that time, he has served in the war department as assistant to Mr. Crowell.

Howard A. Coffin, of the Detroit Pressed Steel Co., Detroit, has been named a member of the committee of three which will develop the organization of the Association of Automotive Wheel Manufacturers, representing all the makers of wire, pressed steel and cast steel wheels in the country.

H. E. Henry, who has been purchasing agent for the Fulflo Pump Co., Blanchester, O., since the business was established, has had added to his duties those of general sales manager. In this latter position he succeeds A. N. Martin, who now is affiliated with the Pyle National Co., Chicago.

W. J. Schlacks has bought the McCord Locomotive Lubricator Co., and has formed a new company, the Locomotive Lubricator Co., in company with O. H. Neill and C. W. Rudolph, who have been with him in the former company. Offices will be in the Tower building, Michigan avenue, Chicago.

John D. Ryan has resigned as president of the Anaconda Copper Mining Co., for the period of the war. He will devote all of his time to the production of airplanes for the government. He likewise has resigned as director of the Anaconda company, which vacancy has not been filled. C. F. Kelley, who has been vice president has been elected president.

W. M. Faber, chief engineer of the American Steel & Wire Co., Cleveland, has been asked by Ohio state authorities to lead the fuel conservation movement in northeastern Ohio. Sixteen counties will be under his supervision. These will be divided into 10 districts and each will have its head. Among the latter are the following: Willard Brown, chief engineer of the Upson Nut Co., Cleveland, head of Cuyahoga county division, west of river; W. H. Buesser, American Steel & Wire Co., Wayne, Ashland and Richland counties.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FRANK H. CROCKARD, formerly vice president and general manager, of the Tennessee Coal, Iron & Railroad Co., and later president of the Nova Scotia Steel & Coal Co., New Glasgow, N. S., has been made president of the Woodward Iron Co., Birmingham, Ala. He will take up his residence at once at Woodward, near Birmingham, and take active part in the operations of the company. A. H. Woodward has been made chairman of the board of directors of the company. R. H. Bannister, vice president, who has been with the company for many years, has been granted a leave of absence for twelve months in order that he might travel for the benefit of his health. J. J. Shannon, for several years general manager of the company, recently resigned, because of his health. The Woodward company will this week, present plans and estimates for a steel works project of which the government is considering the financing to the amount of $25,000,000. Inasmuch as the new president is a construction engineer of ability, it is believed that his becoming affiliated with this company at this time is significant. Accompanied by Mr. Woodward, President Crockard has gone to Washington and New York to confer on the matter of the proposed steel plant.

J. L. Glazier, coke expert of the Cambria Steel Co., Johnstown, Pa., has been made head of the coke inspection department of the federal fuel administration.

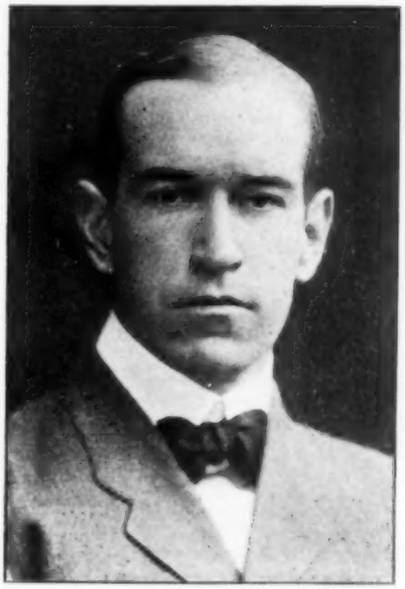
Harold B. Wheeler, Hartford, Conn., for the past two years assistant purchasing agent of the Stanley Rule & Level Co., New Britain, Conn., has enlisted in the naval reserves.

J. W. McQueen, president of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., and his son, have had to go to Hot Springs, Ark., because of an attack of malarial fever.

John W. Foyle, vice president of the Gustin-Bacon Mfg. Co., Kansas City, has been given a commission as major in the headquarters corps at Washington.

E. B. Meitzler, Kingston, Pa., has resigned as manager of sales of the Whitaker-Glessner Co., in the anthracite coal fields because the mill was unable to make deliveries.

Severn P. Ker, president of the Sharon Steel Hoop Co., Sharon, Pa., has been chosen chairman of a committee which will devise a new form of government for the city of Sharon.



T. COLEMAN WARD

Who recently was elected president of the Hickman, Williams & Co., Inc.,

John C. Haskins resigned as chief engineer of the Louisville Bridge & Iron Works, Louisville, Ky., recently to accept a first lieutenant's commission in the engineers' reserve corps.

F. J. O'Brien has been made general manager of the Globe Seamless Tube Co., Chicago, with headquarters at Milwaukee. He formerly was sales manager and later mill manager for this concern.

Frank P. Case, resigned recently as sales manager of the Braeburn Steel Co., Pittsburgh, and has become affiliated with the Atlas Crucible Steel Co., Dunkirk, N. Y., in a similar capacity.

Charles J. Simeon, former production engineer with the Reed-Prentice Co., Worcester, Mass., will return to Worcester from Buffalo, to take charge of the welfare work of the Morgan Construction Co.

J. J. Trefz became general manager of the Southern Foundry Co., Owensboro, Ky., upon his resignation as superintendent of the Anglo-American Mill Co., that city, manufacturer of milling machinery.

Robert F. Carr, president of the Dearborn Chemical Co., Chicago, has been given a commission as major in the department of purchases, storage and traffic of the army with headquarters at Washington.

H. F. Lowry who has been affiliated with the Pennsylvania railroad for 53 years, latterly as division freight agent at Cleveland in charge of coal and ore shipments, resigned recently. E. F. Austin has been appointed to succeed him.

Marshall E. Keig, Chicago, secretary and treasurer of the Harry Vissering & Co., secretary-treasurer of the Okadee Co., and third vice president of the Charles R. Long Jr. Co., has resigned to take up service in the signal corp of the army.

Timothy G. Finnegan, in charge of production on munitions for the Worcester Mfg. Co., Worcester, Mass., has been appointed production clerk in the civilian personnel section of the ordnance department of the army and reported for duty in Washington.

R. J. Smith, 1250 Monadnock block, Chicago, who has been representing the Witherspoon-Englar Co., designer and builder of grain elevators, has been made eastern representative of the Grant Smith-Porter Ship Co. of Portland, Oreg.

P. J. Phillips, of the Federal Export Corp., 42 Broadway, New York, returned last week from a six months' trip through Central America, Peru, Ecuador, Colombia, Venezuela, and the entire Carribean district. While in Panama Mr. Phillips took an active part in the third Liberty loan and war savings stamp drives, which he states were enthusiastically supported. In all the countries throughout his trip he found sentiment for the United States most cordial and demand for American manufactures strong.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

House Tax Bill is Strongly Combatted

CONSIDERABLE dissatisfaction is being expressed concerning the new war tax bill, recently reported to the house. It is charged that the bill is unscientifically framed, places the burdens inequitably and will tend to restrict production; that the excess profits provision is without justification; and that it is a political bill, designed to get as much money as possible from the smallest possible number of voters.

Senator Reed Smoot, member of the senate finance committee, predicts the bill will be radically altered before it gets through the senate. "The revenue bill reported by the ways and means committee," said Senator Smoot, "will have a tendency to discourage production instead of facilitating it. In war times the problem is not so much to raise money as to obtain production." Continuing, Senator Smoot says:

Guns and soldiers do not act by consuming money. They must have materials. What folly is it, then, to raise money in a manner calculated to keep us from getting what we want the money for.

I am not opposed to the principle of the war profits tax. I favor it, because those who are making more money by reason of the war should be heavily taxed, but the excess profits plan takes money simply because it is there on just as sweeping a scale as the war profits tax. It is a good way to raise large revenues from a comparatively few voters.

The rates of taxation are made so high that they are very discouraging to persons who have their capital invested in corporations. By the time the corporations have paid their income and war or excess profits taxes and the stockholders have paid their normal and surtax rates out of what is left for them, they will have very little to show for their investments. The reduction of profits to the vanishing point is not conducive to zeal for further business activity—that is, to production.

Conceding that it is necessary to raise $8,000,000,000, at least one billion of it should be raised by a consumption tax of 1 per cent on every sale of merchandise of a dollar or more. This tax would have been scarcely felt and would not have impeded production, but eight billions is too much. It is figured as a third of our annual war expenditures, but $6,000,000,000 of the $24,000,000,000 are loans to the allies; so, on the one-third basis $6,000,000,000 would have been enough. Even at that we are appropriating more money than we can spend. Last year we appropriated $19,000,000,000 and we spent only $7,960,000,000. We can't spend $18,000,000,000, because we can't produce or get that much worth of war materials and services in a year. Thus, we are curbing industry by taxation, the proceeds of which we can't put back into production.

The bill will be reported to the senate early in October. I doubt if it will be a law until after election.

The Investment Bankers' association also has gone on record as opposing sections of the new bill. The association supports Secretary McAdoo's position in favor of an effective war profits tax and against an increase in the excess profits tax rates.

"The excess profits and war profits provisions of the house bill," said Robert B. Reed, counsel for the association, "demonstrate anew the impossibility of the capital percentage standard as a foundation for the so-called confiscatory-profits tax as applied to corporations, stocks of which have been bought and sold for years on their demonstrated earning value, and represent both cost and capital value to stockholders of their present investment." Continuing, he said:

It may be possible to ignore this fact in a relatively light graduated tax, but it cannot be safely ignored in a 70 per cent or 80 per cent tax, he says. Cases have arisen, and there are no doubt very many of them where practically all the stock has been bought just prior to the taxable year at a value several times the "invested capital" allowed under the act. And of course individual stockholders in all large corporations have purchased at the going value of recent years. A 70 to 80 per cent tax on the excess over, say, 10 per cent of 'invested' capital of 1900 or 1910 in such cases practically confiscates the income over 2 to 5 per cent on the actual investment of the stockholders.

This is the fundamental far-reaching objection to the bill from the viewpoint of business and justice, which is or should be just now that of the government. But on the revenue standard alone there is an equally serious objection affecting a different class of corporations. The bill practically gives a watered stock the presumptive value of full-paid invested capital, and specifically denies to ultra-conservatively capitalized concerns even the actual values invested in the property. Unless I misread the bill, invested capital includes tangible property paid in for stock at its actual value when acquired, not exceeding the par value of the stock. A company which issued 1,000,000 in stock for a going plant in 1910 and has earned, say, on an average $80,000 a year since, will probably get the cost value of $1,000,000 for the plant. Although the plant was probably worth about $500,000 in cash, no one can prove the actual value, and the record valuation would be accepted. The company would have a practical exemption today from the excess profits tax. There are hundreds of such overcapitalized concerns, large and small, which will enjoy relative immunity from this tax. Many of them will not be caught under the war-profits tax. On the other hand, had the plant in the case supposed been undervalued and $200,000 stock issued for it, the corporation would be taxed, say, 60 to 80 per cent on everything over $20,000 a year. The same corporation may be valued by the treasury itself at $5,000,000 for the purpose of the capital-stock tax, and at $1,000,000 as its invested capital under the excess-profits tax. I assume that all of these considerations have been in the minds of Secretary McAdoo and his aides, and we hope the senate committee, which last year was unsuccessful in its efforts to obtain a war-profits tax, will this year have the support of the country and of the administration in working out and putting through a productive profits tax that will get all the revenue estimated for the house bill without penalizing conservative financing and granting immunity to watered capital.

To Pay Gigantic Dividend

One of the largest dividend distributions to be made this month will be to the stockholders of the United States Steel Corp., who will get $21,-

402,850. Aggregate dividend and interests payments in September will total $243,312,541, as against $157,688,631 in the corresponding month one year ago. Stockholders will receive $82,199,624, compared with $87,688,631 the year previous. A number of companies, according to the Journal of Commerce, which made the compilation, will pay smaller dividends, while others have deferred their payments. Some companies have declared the usual dividend payable in scrip. Interest payments will total $161,112,917, as compared with $70,000,000 in September, 1917. This large increase is due to the fact that the government will disburse $88,612,917 on the Liberty loan 4¼ per cent bonds.

Tool Steel Plant Sold

With its purchase by Robert A. Uihlein, Milwaukee capitalist, at a bid of $165,050, the Cayuga Tool Steel Co., Auburn, N. Y., becomes the Auburn Electric Steel Corp. Mr. Uihlein will move to Auburn and give his personal attention to the property. The plant was built about a year ago at a cost several times the price paid, but for some time has been in the hands of receivers. Construction work commenced under the latters' direction will continue and still further expansion is contemplated. Plans already have been formulated for the addition of an electric furnace room, 60 x 85 feet. This will house a 3-ton electric furnace. An office building and laboratory will be built. The present lathe room is to be razed and the machinery removed to the machine shop. Enough raw material is on hand to keep the forging shop and one set of 14-inch rolls in operation until the electric furnaces can be installed, which will be during the latter part of 1918. Finishing machinery likewise will be installed. The new management plans to produce quality tool steels, high speed steel and alloy steels in bars, die-blocks, forgings, etc.

Net Profits Reduced

Kingston, Ont., Sept. 10.—The annual statement of the Canadian Locomotive Co., may be taken to indicate a continuation of business on a scale equal to if not greater than shown in the last report, although there was a decline in profits from $721,254 to $677,936. In fact that there has not been a greater shrinkage in the net income during a period of sharp readjustment of production costs and raw material prices, is regarded with considerable satisfaction. After deducting $90,000 for interest charges, $567,937 was left. Subtracting $105,000 for preferred dividends the sum of $462,937 remained which was equal to 23.3 per cent on the common stock of $2,000,000. Out of this balance $15,000 was allotted to sinking fund, $100,000 was applied to depreciation reserve and $25,000 to special replacement, in all cases the same as in 1917. Six per cent or $120,000 was paid in common dividends, and a balance was brought forward of $222,838. As the previous balance was $706,479, the sum carried forward into the current year was $929,417. The figures compare as follows:

	1918	1917
Profits	$669,916	$721,254
Other income	8,020	.....
	$677,936	$721,254
Deducted	.....	.....
Net	$677,936	$721,254
Bond interest	90,000	90,000
Depreciation	100,000	100,000
Replacement	25,000	25,000
War equipment	.....	.....
Sinking fund	15,000	15,000
Balance	$447,936	$491,254
Common dividend	120,000	.....
Preferred dividend	105,000	105,000
Balance	$222,926	$386,254
Previous surplus	706,479	304,322
	$929,415	$690,576

Japan Buys Blast Furnace

Among the interesting items covered in a recent market review by the Matthew Addy Co., Cincinnati, is the reference to the purchase by Japanese interests of the blast furnace at Talladega, Ala. This is as follows:

One of the odd incidents of the present is the purchase of the furnace at Talladega, Ala., by Japanese interests. The expectations was to ship the iron to Japan, but our understanding is that Uncle Sam has suggested, as the iron is so much needed here, that it be distributed in this country and that the question of export be left until after the war. However, before the iron situation had developed to its present critical stage the government permitted the taking down and shipping bodily of two furnaces, one in Alabama that went to India, and one in Virginia that went to Japan. Both of these furnaces will soon be making iron for the allies.

The Telledega furnace is a 72 x 18 foot stack built in 1889 and remodeled in 1900-1901. It last was owned by the Manheim Alabama Coal, Iron & Railway Co. of 25 Broad street, New York.

The plant of the Richmond Radiator Co., Philadelphia, has been purchased by the Marlin-Rockwell Corp., New Haven, Conn., which has heavy government contracts. The purchase of this property is said to involve $250,000. The property occupies a tract of about five acres.

Enough Benzol

To Meet All Needs Now Believed Will Be Left

New York, Sept. 7.—Although forecasts cannot be made with any certainty, latest estimates regarding future government requirements of benzol indicate that there will be enough of this product left to meet practically all requirements. Therefore, producers now are willing to book contracts involving delivery over the twelve-month period comprising the last four months of this year and the first eight months of next year. However, present prices are regarded as low, and as a result producers are unwilling to contract at the present prices for deliveries later than December. Present offers range from a minimum of 22 cents upwards, for deliveries over the remainder of this year, while prices on later contract deliveries are to fluctuate in accordance with the market, but within certain limits thereby protecting the consumer against any unusual upward price movement, and at the same time guarding the producer against any violent decline. So far, not much contract business has been done on this basis

The market on phenol may be quoted at 42 to 46 cents per pound at producers' plants; there is not much activity. Latest advices on the government's requirements of sulphate of ammonia, indicate that producers will have at least limited amounts of this product right along until the end of the year for sale to fertilizer manufacturers and other commercial users.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) drums	1.55
Toluol (for government)	1.50
Solvent naphtha	.20 to .25
Per Pound at Producers Plant	
Phenol	$0.42 to .46
Naphthalin (nominal)	.09 to .095
Per 100 Pounds at Seaboard	
Sulphate of ammonia (to fertilizer trade)	$4.50 to 4.75
Contract	
Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Shellmakers Will Buy Machinery

Government's Expanded Shell Program Calculated to Cause Many Companies to Buy Equipment—New Plant May Be Built—Several Railroads Place Orders—Pennsylvania Issues List—Tool Makers Concentrate on Larger Sizes

EFFECTS on the machine tool market of the government's announced intention of expanding its shell-making program, already are appearing. Eastern dealers are awaiting more definite advice from Washington and a report has it that a new government plant will be built to produce 5000 155-millimeter shrapnel shells daily. Several manufacturers in the Detroit district are inquiring for equipment needed for such work and these inquiries have been received in the east and in Cleveland. That various automobile companies will fit themselves for this work, is the judgment of dealers, after viewing equipment inquiries as well as orders from that source. The American Car & Foundry Co., has equipped its plant at St. Louis to make 155-millimeter shells and the Briscoe Motor Car Co., Jackson, Mich., has been inquiring for machinery to produce 155 and 175-millimeter shells.

Railroad buying, which received a temporary setback has been quickened during the past week. In the east, the Illinois Central; Chicago, Milwaukee & St. Paul; Louisville & Nashville; Pennsylvania; Hocking Valley; New York Central, and Erie roads all are purchcasing equipment, the aggregate value of which is considerable. The Pennsylvania railroad has issued an inquiry for a large number of machines for Columbus, O. Buying likewise has commenced by the department of military railways on its $1,000,000 list.

After a lull of over a week, miscellaneous demand is picking up again. While this consists mainly of small lot inquiry, some dealers are swamped and find their chief difficulty is in holding machines after locating them, for the definite orders from users who continue the old style policy of shopping around. Some have waited two weeks to be told that the machinery has been sold to a more alert buyer.

In harmony with the government's suggestion looking towards the improvement of machine tool production, boring mill manufacturers in the Chicago territory are concentrating on fewer types of machines. This is noted in the Cleveland territory also where lathe manufacturers have discontinued the smaller sizes and make only the larger types.

Because the layout for the buildings for the Neville island ordnance plant has not been completed, revised specifications on machine tool requirements are held up but these are anticipated at an early date. Bids on 48 cranes were received up until last Friday and awards will be made shortly. Equipment for the East Chicago, Ind., plant of the Baldwin Locomotive Works, probably will be placed largely in the east. In Chicago, some complications over agency relations, are anticipated because of that possibility.

Shell Program Points to New Shrapnel Plant

CONSIDERABLE interest is being manifested in the eastern machine tool market in the government's plans for further increasing shell production. As outlined in last week's issue of THE IRON TRADE REVIEW, this program calls for an additional daily output of approximately 80,000 high explosive shells of 75 millimeters, 35,000 of 155 millimeters and 1500 of 240 millimeters. It is also understood that a new plant will be erected for the manufacture of 155 millimeter shrapnel shells, with a capacity of 5000 daily. Just where the burden of augmenting this production will fall heaviest is not known, although it is significantly stated that several manufacturers in the Detroit district are now figuring on equipment for the manufacture of 155 millimeter high explosive shells.

A feature in the machine tool buying of the past week has been a somewhat improved demand from the railroads. While none of the purchases involved any particularly large amount of equipment, the business in the aggregate was the largest in some time. The Illinois Central railroad closed on several tools including a 90-inch Putman wheel lathe. The Chicago, Milwaukee & St. Paul bought about $20,000 worth of miscellaneous tools. The Louisville & Nashville closed on about $10,000 worth of equipment, while the Pennsylvania, Hocking Valley, New York Central and Erie railroads also figured in the buying, each covering on several thousand dollars' worth of machinery.

Other demand remained exceedingly light, with order for single tools predominating. Some sizable buying, however, was done by the newly appointed purchaser for military railroads on a list of about $1,000,000 worth of tools issued some time ago. The Bethlehem Shipbuilding Corp. also purchased several milling machines and a few other tools for its yard at Alameda, Cal. Tools for fitting up a school for training machinists were bought by the Wright-Martin Aircraft Corp.

By far the largest buyer of cranes during the past week was the Bethlehem Shipbuilding Corp., which closed on 19 overhead and gantry cranes, and also, it is understood, 12 wall cranes of two and three tons capacity each. Of this number, the Cleveland Crane & Engineering Co., Wickliffe, O., received five 3-ton single legged gantry cranes, with 50-foot span; four 10-ton single legged gantry cranes, with 100-foot span; and one 5-ton overhead crane, with 47-foot span. The Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., received two overhead cranes, making a total of six to be purchased from the Shepard company. The Milwaukee Electric Crane & Mfg. Co. was awarded a 15-ton overhead crane,

The little Greek circle which frames our trade mark will often repeat itself in the different illustrations of our plant; each time it reappears it is to especially designate some operation, wherein we have attained the highest degree of perfection in Agathon Alloy Steels.

The Central Steel Company

Massillon, Ohio

SALES OFFICES:

Detroit Office — 326-27-28 Ford Bldg., F. Walter Guibert, District Representative.

Cleveland Office — Hickox Bldg. The Hamill-Hickox Company, District Representatives.

Chicago Office—1370 People's Gas Bldg., 122 So. Michigan Blvd. C. H. Beach, District Sales Manager.

Philadelphia Office—603 Widener Bldg., Frank Wallace, District Sales Manager.

Syracuse Office — 621 University Block T. B. Davies, District Sales Manager.

J. E. Dockendorff & Co., 20 Broad St., New York, General Export Agents.

Agathon Chrome Nickel
Agathon Chrome Vanadium
Agathon Nickel Steel
Agathon Special Analyses
Agathon Vanadium
Agathon Chrome Steel
Agathon High Carbon

AGATHON STEELS
TRADE MARK

with 100-foot span, and the Northwestern Engineering Co., Portland, Oreg., six 5-ton gantry cranes, of the double cantilever type, with spans of 168 feet. It is understood that all these cranes, except one, are for the Alameda plant, and that six electric cranes remain to be purchased. Included in the few new inquiries before the market is that of the Robert Dollar Co., 17 Battery Place, New York City. This inquiry calls for three handpower cranes, of 40, 20 and 10 tons capacity, respectively, for installation in a shipyard in China, which recently received a contract from the Emergency Fleet corporation. The electric crane requirements of the Pennsylvania railroad, including those of several months' standing, are two 200-ton overheads, two 100-ton overheads, two 10-ton overheads, and two 3-ton bucket cranes.

September Starts Well In Chicago

MACHINE tool dealers in the Chicago district find demand is increasing on the part of small buyers after something of a lull during August. The inquiry of the Baldwin Locomotive Works for equipment to go into the projected plant at East Chicago is being figured, and inasmuch as this business will be placed at Philadelphia, some complications over agency relations may result. Some dealers believe the plant may be a government institution and that costs and time of delivery are being obtained on the present inquiry to give a basis on which further negotiations may be carried forward. Some difficulty in obtaining machine tools from usual sources results from the fact that many manufacturers are limiting their product to a part of their former line for greater efficiency. For instance, one manufacturer of boring mills now is making only two sizes, while another manufacturer is limiting himself to some of the sizes which have been dropped by the first maker. This policy is being followed largely, in the interest of better production, but it is somewhat puzzling to buyers. No activity is visible among railroad buyers and most plants turning out munitions and ordnance seem to have finished their buying for the present. The Malleable Foundry Co., Benton Harbor, Mich., is building a foundry and machine shop. The Swedish Crucible Steel Co., Hamtramck, Mich., is preparing to build two additional foundries. The Mechanical Products Co., Portland, Oreg., will built a plant for the manufacture of forgings and iron valves. The Ferguson Mfg. Co., and the Waterloo Register Co., both of Waterloo, Iowa, are preparing to rebuild their burned plants. The National Enameling & Stamping Co., Granite City, Ill., will build a lime burning plant and a turbine plant. The Columbia Block & Tool Co., Vancouver, B. C., will build a foundry and machine shop, equipped with a traveling crane.

Pennsylvania Railroad Issues Big List

CLEVELAND machine tool dealers report the market shows some improvement over the latter part of August. This mainly consists of small lot inquiry and the placing of many orders for one or two machines. One big list, however, to reach the Cleveland territory is that of the Pennsylvania railroad, Pittsburgh. This comprises 18 tools for Columbus, O., as follows: Four motor-driven dry floor grinders; one twist drill grinding machine, one cylindrical grinder, one 42-inch vertical turret lathe, one single spindle, rotating, head pipe threading machine, one each 25-inch x 10-foot, 36-inch x 14-foot, heavy duty and 48-inch x 8-foot engine lathes, one each 24-inch heavy duty and 36-inch Morton draw cut shaper, one 24-inch heavy duty crank shaper, one each portable valve chamber boring and valve setting machines, one 1½-inch triple spindle bolt cutter, and one 1500-pound steam hammer, 24-inch stroke, single frame. This railroad desires the following equipment for Wheatland, Pa.: one 16-inch stroke heavy duty pillar shaper, one each 20-inch x 3-foot and 36-inch x 11-foot heavy duty engine lathes; one car axle lathe, one 6-foot arm radial universal drill press and one 200-ton hydraulic press. Car axle lathes are also desired for the Pennsylvania railroad's Scully, Pa., Dennison, O., Logansport, Ind., and Undercliff, Pa., shops. The G. C. Kuhlman Car Co., Collinwood, O., is in the market for some large power presses and the Nickel Plate railroad has not placed orders as yet on its list of three tools recently issued. Dodge Bros., Mishawaka, Ind., is buying equipment and placed an order recentlly for two 30-ton presses.

Other miscellaneous inquiry comes from automobile manufacturers and reflects the intention of the government to enlarge its shell-making program. Among other Michigan concerns to be in the market for equipment of this character is the Briscoe Motor Car Co., Jackson, Mich. It is understood that this company is producing 155 and 175 millimeter shells and has placed orders for some equipment. The Winton Motor Car Co. is understood to have placed its order for its requirements of machine tools for work on Browning machine gun tripods. The Paramount Tool Co., Cleveland, which is making tools for government work, has been in the market and has placed an order for one No. 1½-B universal milling machine. The Engel Aircraft Corp., Niles, O., continues to enter the market from time to time, placing its orders with a Cleveland dealer.

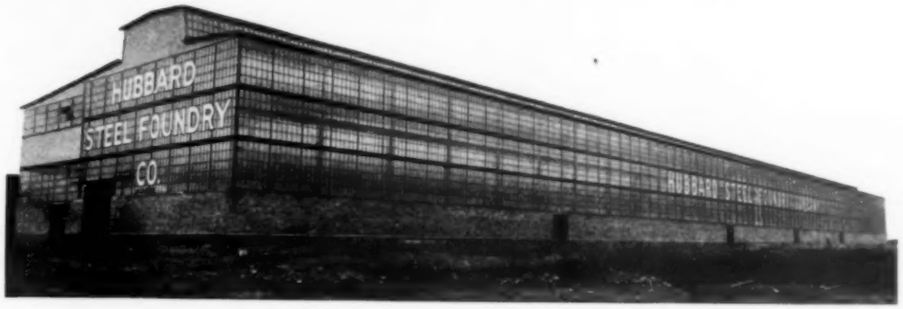
One dealer reports that his problem is not only to locate equipment but to keep a line upon it until the user gets ready to place his order. He states that many persist in following the old-fashioned method of shopping around. Contrasted with this is the experience of another Cleveland dealer who was visited last week by a representative of a Michigan manufacturer. Without asking for a price, the buyer said: "If you still have that 20-inch Snyder drill which appeared in your last list, ship it to me." As users are becoming educated to the market's conditions, the latter is the course usually followed.

A tendency exists among tool buiders to concentrate on the production of fewer types. One lathe manufacturer has dropped 12 and 14-inch lathes and makes only 16 and 18-inch sizes, while another has dropped 14 and 16-inch types to devote his entire attention to 18 and 20-inch machines. The American Shipbuilding Co., it is stated, has placed orders for all of its requirements now in sight. The American Car & Foundry Co., which is building a plant in St. Louis to produce 155 millimeter shells has filled its machine tool requirements.

Neville Island Developments Expected Soon

NOTHING has come out in Pittsburgh as yet with regard to placing of the cranes for the Neville island ordnance plant, but the trade is watching expectantly for an early announcement. The revised specifications for 48 cranes, it is understood, called for the entering of bids by Friday morning, and awards are expected to be made soon. More revised specifications of the Neville island plant tool and machinery requirements are looked for before long, one reason for their failure to have come out being the fact that the layout of the buildings has not yet been completed. Outside of the requirements for this plant, there has been nothing of special interest in the machinery and tool market. Manufacturers are busy on the needs of essential work plants and short dates are offered only on small lines. Deliveries are not as satisfactory as they might be. On the whole, it has been a quiet week, with no new lists appearing and users, at least of small tools, are well covered for the present.

SPEEDING with ROLLING MILL JIM



Say Fellows! you remember the first of March I told you the "Hubbard" broke ground for a new foundry? Well here's a picture of her, she started with a BANG, June 3rd. Just 93 days! She has ***some*** up-to-date equipment in her, installed by ***some speed artists,*** I'll say: electric furnace, open hearth furnace and all that swell stuff. Pike her off for yourself!

So long,

Rolling Mill Jim.

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

AUGUSTA, ME.—The Milwaukee Screw Products Co. has been incorporated to make castings, machine screws, etc., with $75,000 capital by E. L. Johnson, E. Connor and A. B. Farnum.

BAR HARBOR, ME.—The New Florence hotel and the Rogers, Dunbar and Johnson business blocks were burned Aug. 30, with $100,000 loss.

CHERRYFIELD, ME.—The Cherryfield Shipbuilding Co. has been incorporated with $5000 capital by Fred W. Hinckley, Fred S. Bamford and George D. Hinckley.

LAKEPORT, N. H.—The sawmill of the Boulia-Gorrell Lumber Co. was damaged by fire Aug. 30, with a loss of $100,000.

BOSTON.—The Hollidge Badger Corp. has been incorporated to make automobiles, boats, gasoline engines, etc., with $10,000 capital by George L. Badger, E. M. McGowan and C. C. Hollidge.

BOSTON.—Bids are being received by the bureau of yards and docks, Washington, for additions to the machine shop and foundry at the Boston navy yard. It is estimated the improvements will cost $900,000.

BROCKTON, MASS.—The factory of the M. H. Bates Co. was damaged by fire Sept. 1, with a loss of $20,000.

CHELSEA, MASS.—S. Slotnick will build a brick, 2-story, 50 x 26 x 110-foot casting shop at 46 Gerrish street.

CHELSEA, MASS.—The Boston Bag Wood Co. will build a 2-story, 19 x 28 x 140-foot and a 1-story, 19 x 28 x 120-foot storage buildings at 119 and 141 Crescent avenue.

NEW BEDFORD, MASS.—The Morse Twist Drill & Machine Co. has let the contract for a brick, 2-story, 14 x 27-foot addition.

PEABODY, MASS.—The Lutes & Draper Machine Co. has been incorporated to make leather working machinery of every kind with $50,000 capital by Charles R. O'Connell, Carvel R. Lutes and James D. McNamara.

WEST DUDLEY, MASS.—The Burmese Paper Co. will build a brick, 1-story, 30 x 50-foot hydro-electric power plant, to cost $50,000.

WINCHENDON, MASS.—The Green & Hickey Leather Co., Shrewsbury, Mass., has let the contract for a 1-story, 25 x 100-foot addition.

WORCESTER, MASS.—The Graton & Knight Mfg. Co. has let the contract for a brick and steel, 1-story, 48 x 160-foot addition, to cost $20,000.

WORCESTER, MASS.—Two storage buildings will be erected here. One will be built by David Soloman and will be two stories 29 x 73 feet. The other will be 2 stories high, 40 x 40 feet, by an owner whose name is being withheld.

HILLSGROVE, R. I.—Fire damaged the annealing, turning, sorting and tumbling departments, boiler room and pattern storage vault of the Rhode Island Malleable Iron Works, Aug. 24, causing a loss of $500,000.

NORTH SMITHFIELD, R. I.—The Andrew's Mill Co. has let the contract for six buildings to cost $250,000, including a 174 x 220-foot main weave shed; 47 x 80-foot storehouse; 40 x 56-foot boiler house; 24 x 36-foot power house; 45 x 75-foot recreation building and a 45 x 60-foot garage.

PAWTUCKET, R. I. — The Johnson's Brass Foundry Co. has been incorporated with $10,000 capital by Herbert Johnson, Providence, R. I., Fred Sheriff and James E. Brennan.

BRIDGEPORT, CONN.—The general contract for a plant addition has been awarded to the Schwartz Bros. Co. by the Eastern Malleable Iron Works. The addition will be two stories, 38 x 266 feet.

HARTFORD, CONN.—The Hartford Special Machine Co. will build two 25 x 50-foot additions to its factory and a 30 x 100-foot storage building.

MIDDLETOWN, CONN.—Meech & Stoddard will build a concrete 80 x 100-foot office and warehouse addition to their mill, and a 40 x 42-foot garage.

MIDDLETOWN, CONN.—Plans have been figured for a brick, fireproof, 4-story and basement, 40 x 100-foot addition to the Middlesex county hospital.

Business Changes

As a result of a merger, the interests of the Chas. T. Topping Machinery Co., Pittsburgh, now are amalgamated with those of the Pittsburgh office of the Lakewood Engineering Co., Cleveland. Headquarters are located at 411 Fulton building, Pittsburgh, and the telephone number is Grant 778.

The Bridgeport Tool & Gage Co., Inc., Bridgeport, Conn., has changed its name to the Cedar Tool & Gage Co.

The Lakewood Engineering Co., Cleveland, has opened new offices in Chicago in the Lumber Exchange building. Messrs. E. A. Allen, A. W. French, E. W. Cox and E. E. Zeiss are in charge.

Spreckels Bros. Commercial Co., Los Angeles, Cal., has moved its office to room 201 Citizens National Bank building, at the corner of Fifth and Spring streets.

The Standard Coupler Co. has closed its Chicago office because George A. Post, Jr., western sales manager, and Wilberforce Eckels, assistant western sales manager, have entered military service.

Along the Middle Atlantic Seaboard

BUFFALO.—A charging plant, comprising four buildings, will be erected here by the Prest-O-Lite Co., Indianapolis.

BUFFALO.—Work will start shortly on a foundry addition at the plant of the Lumen Bearing Co.

BUFFALO.—A 1-story boiler plant, 85 x 120 feet, is being erected by the Cousins & Son Boiler Works.

BUFFALO.—Stone & Webster, Boston, have the contract for a $300,000 electric power plant, to be erected by the Pierce-Arrow Motor Car Co. at its plant on North Elmwood avenue. A 1-story addition, 50 x 100 feet for testing work also will be erected.

GARDENVILLE N. Y.—The New York Central railroad will erect an engine house here, which will be 100 x 300 x 500 feet. The J. W. Cowper Co., Inc., Buffalo, will be in charge of the construction.

LONG ISLAND CITY, L. I., N. Y.—Plans are being drawn by Architect R. Holstein for a $35,000 foundry for the John Polachek Bronze & Iron Co.

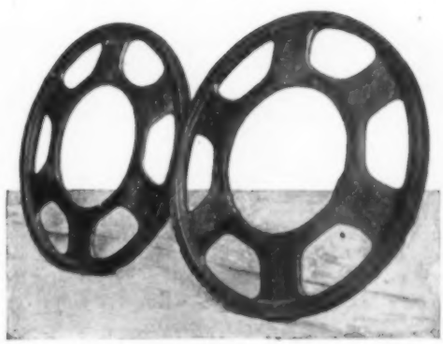
NEW YORK CITY.—The Tool Machining Corp. recently was incorporated to manufacture and deal in machinery with $250,000

The Plant and Some of Its Specialized Products

Upon a small and apparently inconsequential casting the success and reputation of the motor truck, tractor or automobile manufacturer often depends. It is with pride that we can take our sales list and unhesitatingly call it a list of nationally successful manufacturers. The Farrell-Cheek Steel Foundry specializes in small steel ***quality*** castings. Castings such as are used by manufacturers of tractors, motor trucks, automobiles, machine tools, etc. We also make blank gears, case hardening boxes and carbonizing boxes. Let us give you a quality quotation on ***Farrell-Cheek Quality Steel Castings.*** The price and delivery date will prove interesting—write at once.

Farrell-Cheek Steel Foundry Co.

SANDUSKY, OHIO



capital by G. Morris, M. M. Capelle, 115 Broadway, and others.

ROCHESTER, N. Y.—The contract for erecting a $100,000 storage building, 60 x 350 feet, has been awarded by the Eastman Kodak Co. to the A. Frederick & Sons Co.

AVIS, PA.—The New York Central railroad has let the contract for the erection of shops here.

BATH, PA.—The Pennsylvania Cement Co. has let the contract for a stock house to the Turner Construction Co.

BEAVER BROOK, PA.—The C. M. Dodson Coal Co. is planning the installation of electric pumping machinery at its No. 5 colliery.

CHESTER, PA.—The American Steel Foundries will build a $9000 annealing building to its plant in this city.

INDIANA, PA.—The Keustone Resilient Wheel Co., Pittsburgh, has bought the plant of the Penn Enamel Sink Co. here, and will remodel it for the manufacture of wheels for automobiles.

MARIETTA, PA.—The Pennsylvania Railroad Co. is arranging to build a roundhouse near here.

PHILADELPHIA.—Lutz Co., Inc., will start work shortly on a $15,000 addition.

PHILADELPHIA.—The Otis Elevator Co. contemplates the erection of a $30,000 addition. Plans call for a 2-story structure, 80 x 154 feet.

PHILADELPHIA.—The Philadelphia & Reading railroad awarded the general contract for a $75,000 storage house to Russell P. Borthwick.

PHILADELPHIA.—The Pennsylvania railroad awarded the general contract to Irwin & Leighton for the construction of a $100,000 engine house.

POTTSTOWN, PA.—The Wyoming Valley Water Supply Co. will build a reservoir at Tomhicken, near here.

PUNXSUTAWNEY, PA.—The Eldred Glass Co. is building a plant here.

RUTHERFORD, PA.—The Pomeroy Construction Co., Philadelphia, has plans for an engine house, 32 x 114 feet, here for the Reading Railway Co.

SHARON, PA.—The Sharon Water Co. will purchase a 5,000,000-gallon pump for its plant here.

TAMAQUA, Pa.—The Philadelphia & Reading Railway Co. will build shops. The contract has been let to William E. Riebe, Tamaqua, for $25,000.

WARREN, PA.—The National Forge & Tool Co. is arranging to build a plant at Irvine, Pa.

WEST NEWTON, PA.—W. E. Clark, of West Newton, and George C. Blackmore, Pittsburgh, are largely interested in a new company which will build a plant here to manufacture pipe nipples.

WILLIAMSPORT, PA.—The Lycoming Rubber Co., Rose street and Erie avenue, has let the contract for a 1-story boiler house, to cost $50,000, to the McNally Building Co., Framingham, Mass.

BRIDGETON, N. J.—Plans are being drawn by Beal & Lily, Philadelphia, for a $100,000 shipyard to be erected here. The name of the owner is being withheld.

JERSEY CITY, N. J.—The Vulcan Foundry Co., 15 Exchange place, has been incorporated to engage in a general foundry business, with $100,000 capital.

JERSEY CITY, N. J.—The Arms & Shells Forging Co., 586 Newark avenue, has been incorporated with $125,000 capital to engage in manufacture of munitions, etc.

NEWARK, N. J.—The Newark Wire Cloth Mfg. Co. will start work soon on the erection of an addition to its plant.

NEWARK, N. J.—The Essex Foundry Co., Avenue D and Murray street, has a permit to make a number of alterations to its steel foundry to cost $41,000.

NEWARK, N. J.—A. P. Munning & Co. has been incorporated by J. G. Daniel, Brooklyn, and John Gregory, of East Orange, with $500,000 capital, to manufacture chemicals.

NEWARK, N. J.—The Flockhart Foundry Co. has been incorporated with $1,200,000 capital by James Flockhart, R. E. Moore and John Campbell, all of Newark.

PAULSBORO, N. J.—The Fort Mifflin Shipbuilding Co., Philadelphia is having plans drawn for the construction of a $1,000,000 shipbuilding plant. Plans call for a 1-story copper shop, 60 x 180 feet; a joiner shop, two stories, 80 x 400 feet; heavy plate shop, 1-story, 60 x 580 feet; light plate shop 1-story, 140 x 180 feet; foundry, 1-story, 80 x 580 feet; and blacksmith shop, 1-story, 80 x 350 feet. Leonard D. Harris Flushing, Long Island, is engineer in charge.

BALTIMORE—The war department, Washington, is arranging to build several large warehouses here.

BALTIMORE—Maryland Color Printing Co., Holiday and Hillen streets, will build a 6-story addition, 83x120 feet, to its plant here.

BALTIMORE.—The bureau of yards and docks, navy department, Washington, has had plans prepared for a coal storage plant here to cost $125,000.

BALTIMORE.—Walter E. Lee, city water engineer, is having plans prepared for additions to filtration plant here, to cost $1,000,000.

BALTIMORE.—The American Can Co., Maryland Trust building, has let the contract to the West Construction Co., 907 American building, for a 3-story plant to cost $100,000, near Boston.

BALTIMORE.—The American Cellulose & Chemical Co. has had plans prepared by George A. Fuller Co., Fuller building, New York City, for four large buildings here to cost $3,000,000.

Activities in the Central States

LODI, WIS.—A public garage and repair shop, 50 x 100 feet, is being erected for Farness Bros.

FOND DU LAC, WIS.—The Giddings & Lewis Co., manufacturing metal working machinery and tools, has engaged Architects Davidson & Weiss, 53 West Jackson Boulevard, Chicago, to prepare plans for a general utility shop addition, 50x75 feet, and a garage, 20x36 feet.

HARTFORD, WIS.—A new vegetable canning plant costing about $50,000 will be erected and equipped by the Hartford Canning Co., to replace the factory damaged by fire in July. Plans call for a fireproof building, 90x150 feet, with steel sash, two and three stories.

MILWAUKEE.—The Allen Bradley Mfg. Co., Louis Quarles treasurer, will build an addition to cost $40,000.

MILWAUKEE.—The A. F. Wagner Architectural Iron Works has the contract to furnish and install the cell work in the city jail at Superior, Wis.

MILWAUKEE.—The Standard Steel Corp., 908 Majestic building, has amended articles of incorporation and plans to build a machine shop costing about $75,000.

MILWAUKEE, WIS.—The Smith Engineering Works, 1154 Thirty-second street, will be enlarged by the erection of a brick, steel and concrete shop addition, 65x100 feet, part two stories.

MILWAUKEE.—The American Power Shovel Co., capitalized at $200,000, has been chartered to manufacture excavating, loading and unloading equipment by Walter Drew, Milwaukee; P. O. Fish and John T. Blake, Madison.

MILWAUKEE.—Work on the first unit of the new gas tractor plant which the General Motors Corp., Detroit, is establishing at Janesville, Wis., has been put under way and will be rushed so that a regular production may begin by Nov. 1. The first unit will consist of a machine shop, erecting and assembling shop, with testing and shipping rooms. Frank D. Chase, Inc., Chicago, is in charge of the work.

RACINE, WIS.—A 15,000 kilowatt generating unit is being delivered by the Allis-Chalmers Mfg. Co., Milwaukee, to the Milwaukee Electric Railway & Light Co.'s main station here. Improvements costing more than $100,000 are being made at the station at Racine.

SHEBOYGAN, WIS.—Plans are being prepared by Klug & Smith, Milwaukee, for a steel bridge, 220-foot span with a 60-foot bascule span. C. A. Boley is city engineer.

SHEBOYGAN FALLS, WIS.—The Falls Motors Corp. has awarded a contract to the Immel Construction Co., Fond du Lac, Wis., for erecting a machine shop addition, 60x175 feet, designed by Architect A. C. Clas, Milwaukee.

STURGEON BAY, WIS.—The Universal Shipbuilding Co., H. Reisen president, will build a 1-story boiler shop, 120 x 150 feet.

WEST ALLIS, WIS.—The Acme Pattern Co., 495 Fifty-sixth avenue, is building a one-story pattern shop and storage addition, 50x80 feet.

WEST BEND, WIS.—Joseph Schneider & Co., Menasha, Wis., have the contract to build an 80-foot bridge, with 40-foot roadway, across the Milwaukee river, at a cost of $6,500.

CRYSTAL FALLS, MICH.—The Lockwood Hotel Co. has engaged Architect Derrick Hubert, Menominee, Mich., to prepare plans for a new $50,000 hotel to replace the one damaged by fire early in August.

DETROIT — The Solvay Process Co., F. F. Bont engineer, Jefferson avenue,

WSM

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES

The Hughes Mechanical Gas Producer

REPEAT ORDERS
Indicate Satisfaction

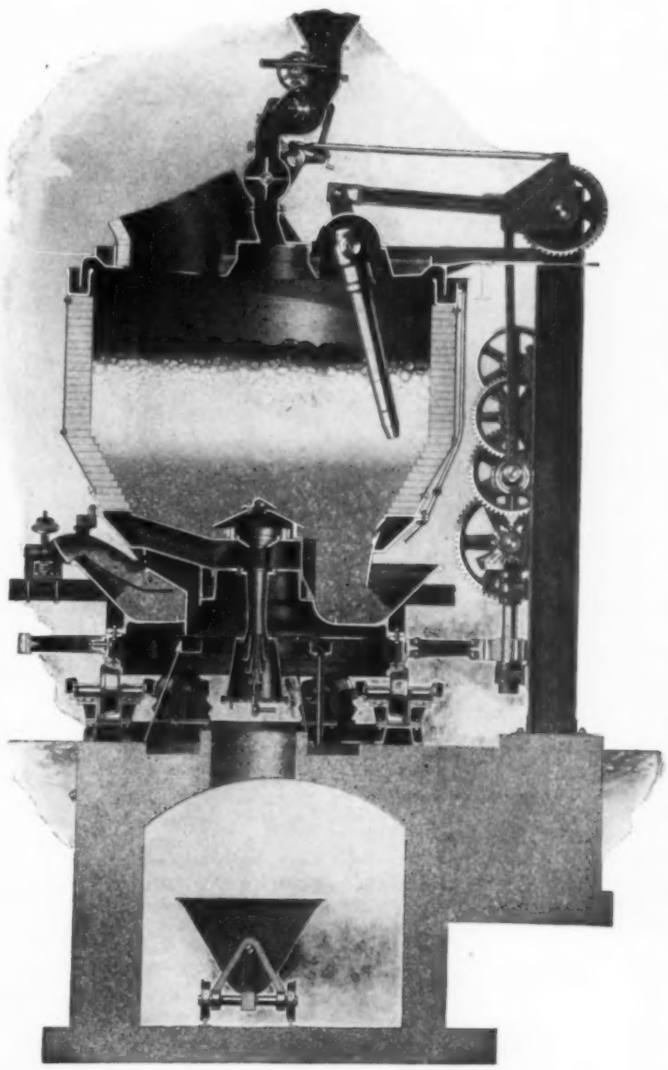
A partial list of repeat customers showing number of Hughes Producers used by each.

Carnegie Steel Co.	119
American Steel & Wire Co.	56
Bethlehem Steel Co.	54
New Jersey Zinc Co.	42
National Tube Co.	41
Jones & Laughlin Steel Co.	40
Lackawanna Steel Co.	39
Indiana Steel Co.	38
Inland Steel Co.	36
Minnesota Steel Co.	36
Pittsburgh Steel Co.	36
American Sheet & Tin Plate Co.	32
Republic Iron & Steel Co.	32
American Rolling Mill Co.	30
Corrigan, McKinney & Co.	30

More than 1000 in use

Write for Bulletin A-4

Bulletin A-4 contains considerable information on the subject of producer gas and explains the Hughes Uniform Feed, Water Cooled Poker, Blowing, Mixing and other special features which contribute to its splendid performance. A copy is waiting your request.



THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

will build an electric power plant, 72x80 feet, to cost $35,000.

FLINT, MICH.—The Buick Motors Co. will build an aluminum foundry 1 and 2-stories, 120 x 300 feet and 90 x 240 feet, to cost $200,000.

GRAND RAPIDS, MICH.—A picric acid plant will be erected under government supervisioin outside of this city, at cost of $5,000,000.

GRAND RAPIDS, MICH.—The Semet-Solvay Co. is contemplating the erection of a plant to cost about $5,000,000 near Kellogsville, Mich., in which to manufacture picric acid.

HAMTRAMCK, MICH.—The Michigan Smelting & Refining Co., Joseph Sillman president, 1685 Jos. Campau avenue, will build a plant and office building to cost $100,000.

JACKSON, MICH.—Two additions to the Briscoe Motor Corp. plant are being erected for the manufacture of war materials. They are 200x200 feet and 90x100 feet.

LANSING, MICH.—The Reo Motor Car Co. has new orders for military tractors which will keep the plant operating to capacity up to July, 1919. Four milling machines are to be installed.

MARINE CITY, MICH.—The McLouth Shipbuilding Co. has a contract for 10 ocean-going tugs.

PORT HURON, MICH.—The American Machine Corp., which is building a new plant here, has purchased the factory of the United Fence Co.

CHICAGO.—The Oliver Metal Stamping Co., capitalized at $100,000, has been chartered by Charles E. Ritter, Oliver H. Starrett, and Branch Cottrell.

CHICAGO.—The Dunbar Mfg. Co., Thomas Dunbar president, 5133 West Lake street, is building an addition to its drop forge shop, 60 x 125 feet, to cost $3000.

CHICAGO — The Montana Tractor Co., capitalized at $1,000,000, has been chartered in Delaware to manufacture tractors and trucks by A. D. Springer and Samuel C. Wood.

CHICAGO.—The Burnside Steel Co. has bought 268 x 680 feet at Ninety-second place and Kimbark avenue, adjoining its plant, on which it will build an addition. The company also plans to erect a 1-story foundry, 60 x 180 feet, costing $25,000.

GRANITE CITY, ILL.—The National Enameling & Stamping Co. will build a steel and brick lime burning plant 100x200 feet, to cost $100,000, and a mixed pressure turbine palnt 70x70 feet, to cost $350,000. The Engineering Service Corp., Railway Exchange building, St. Louis, will receive bids until Sept. 15.

MOLINE, ILL.—The Western Foundry & Machine Co., has bought the foundry of the Wahle Foundry & Machine Co., at Davenport, Iowa, and will operate it.

ROCKFORD, ILL.—The Elco Tool Corp., capitalized at $28,000, has been chartered by Fred P. Sjoberg, Otto Lundell and Evar Lagerholm.

EAST CHICAGO, IND.—The Baldwin Locomotive Works, G. W. Sample Jr., engineer, care company, Philadelphia, will award contracts soon for a plant at East Chicago, to cost $5,000,000.

EVANSVILLE, IND.—The Midwest Machinery Co., capitalized at $20,000, has been chartered to manufacture machinery by A. N. Hudson, George A. Lutz and Walter B. Korff.

FRANKFORT, IND.—A bond issue of $50,000 has been authorized for improving the municipal electric light plant.

FRANKFORT, IND.—The Hoosier Tractor Co., capitalized at $100,000, has been chartered to manufacture tractors by Russel P. Harker, Cary W. Martin and Geddes Van Brunt.

HUNTINGBURG, IND.—The Huntingburg Machine Works, capitalized at $15,000, has been chartered to manufacture machinery by William E. Menker, Charles Moenkhaus and Louis E. Blemker.

INDIANAPOLIS — The Frank Kopel Mfg. Co., capitalized at $20,000, has been chartered to manufacture machinery by Frank Kopel and others.

INDIANAPOLIS — The Indianapolis Screw Products Co., capitalized at $35,000, has been chartered to manufacture machinery by Earl R. Conder, Robert H. Pyle and C. P. Conder.

INDIANAPOLIS — The Weatherspoon Harrow & Disk Co., capitalized at $20,000, has been chartered to manufacture farming implements by B. W. Weatherspoon and R. A. Weatherspoon.

CLEVELAND.—In addition to the factory building now being completed, the Aluminum Casting Co., 6205 Carnegie avenue, has let contracts for the erection of two more buildings, to be erected at a cost of $100,000.

CLEVELAND.—The voters of Cleveland are to decide at the November election whether the proposed union depot for Cleveland is to be built on the Cleveland public square or on the lake front.

COLUMBUS, O.—According to word from Washington, two additional warehouses, to cost $800,000 are to be constructed at the government depot east of the city within the near future.

WARREN, O.—The Heitsell Steel Form & Iron Works is contemplating the erection of a steel plate factory, 110 x 150 feet. Plans have been completed and the contracts will be let shortly.

New Business in Canada

VANCOUVER, B. C.—The Columbia Block & Tool Co. will build a foundry, 50x150 feet, and a machine shop, 50x150 feet, costing $30,000. A traveling crane will be part of the equipment.

VANCOUVER, B. C.—It is reported that the contract for the construction of the Pacific Great Eastern extension north of the Clinton section has been awarded to Cotton Co., Ltd., Vancouver. Approximately $350,000 will be expended. The laying of steel for a distance of 52 miles is involved.

VANCOUVER, B. C.—Contract has been awarded to S. M. McCleod, 2857 Fifth avenue west, for the construction of a machine shop and gas engineering building in connection with the vocational work for the invalid soldiers' committee. A commercial building, vocational building, carpenter shop and blacksmith shop also will be constructed. Contracts will total about $25,000.

AMHERSTBURG, ONT.—The city council is in the market for a 25-cycle transformer. Prices will be received by Mayor W. Fred Park.

CARLETON PLACE, ONT.—The Hawthorn Mills Co. will build a factory at a cost of $25,000.

CHATHAM, ONT.—The Denby Motor Truck Co., Detroit, has completed plans for the erection of a plant here for the manufacture of motor trucks.

KITCHENER, ONT.—Ellis & Howard, Ltd., has been incorporated to manufacture electrical equipment, machinery, etc., with $40,000 capital, by Frank O. Ellis, Samuel F. Howard, Walter H. Howard and others of Kitchener.

LONDON, ONT.—Bids will be called about Sept. 15 for the building of a weaving plant for the Hall-Dent Co., 286 Dundas street, to cost about $50,000.

OWEN SOUND, ONT.—The Auto Sales Co., Ltd., has been incorporated to manufacture automobiles, etc., with $10,000 capital. The incorporators are Eugene C. Spereman, David J. Barss and Mabel Hescop.

ST. CATHARINES, ONT.—The town council will build a sewage pumping plant to cost $9500. The contract has been awarded to John Wood.

ST. CATHARINES, ONT.—The plant of the Canadian-Warren Axe & Tool Co., which recently was partially damaged by fire, is being rebuilt.

ST. CATHERINES, ONT.—The Niagara Tool & Machinery Co., Ltd., has been incorporated to manufacture machinery with $40,000 capital. Provisional directors are Harry Shortt, Nella L. Nelson and Henry H. Collier.

SWANSEA, ONT.—The plant owned by the Steel Co. of Canada was damaged by fire with a loss of $5000 recently.

TILLSONBURG, ONT.—The pumping station owned by the Tillsonburg Waterworks Co. was damaged by fire with a loss of $100,000. The company will rebuild.

TORONTO, ONT.—The Canada Metal Co. is building a galvanized iron addition at a cost of $5500.

TORONTO, ONT.—The Canadian Metal Co. will build a 2-story addition at a cost of $5000.

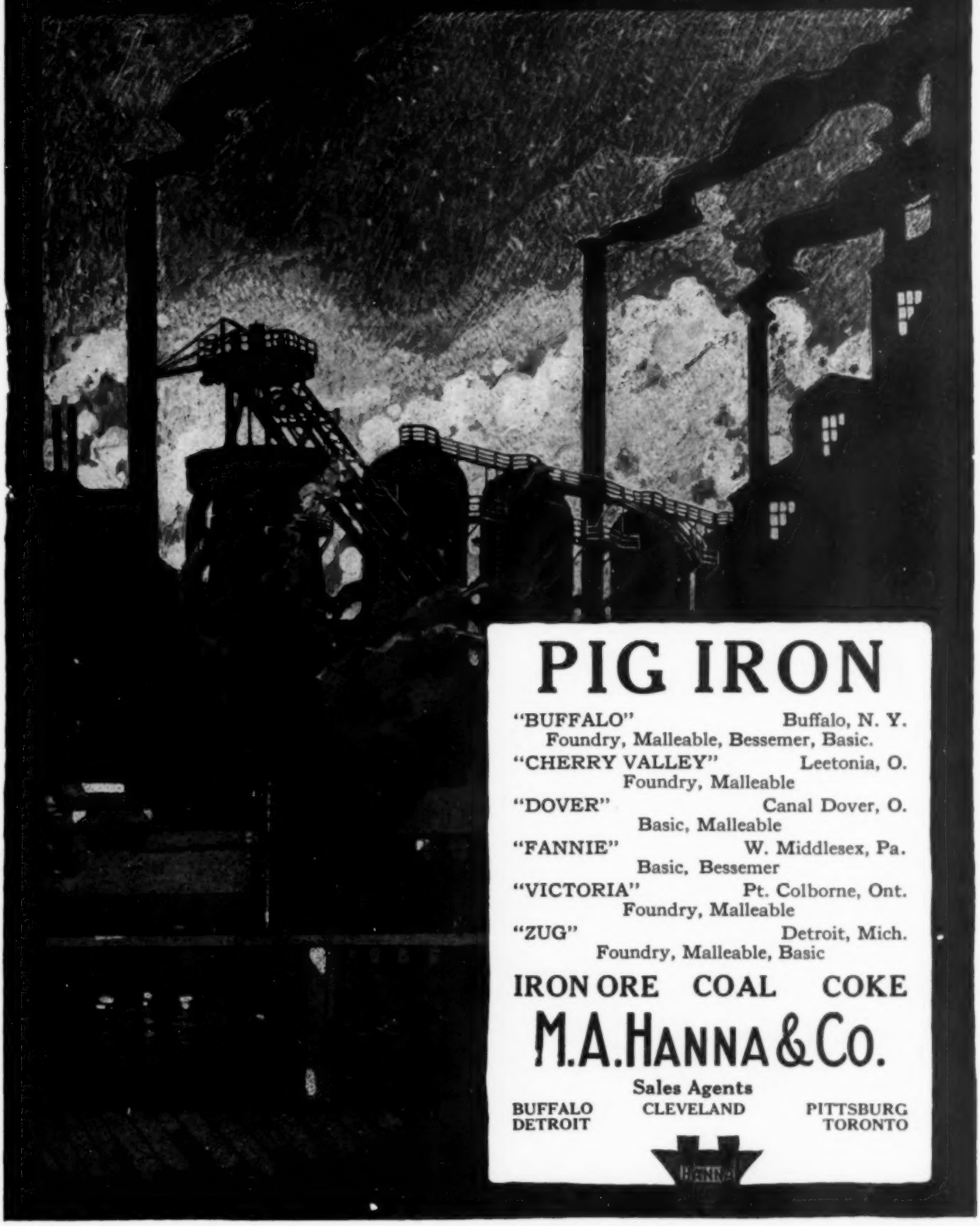
TORONTO, ONT.—The Metal & Thermit Corp., is fitting up an abandoned building, which it is to use as a steel welding shop. The improvements will cost about $4000.

LA TUQUE, QUE.—The Brown Corp., pulp and paper manufacturer, is about to start on the erection of a plant here, which will be constructed at a cost of $20,000,000.

MONTREAL, QUE.—The Crane Co., Ltd., is erecting a plant on the bank of the Lachine canal for the manufacture of valves and fittings, at an approximate cost of $750,000.

MONTREAL, QUE.—The sash and door factory owned by H. Chagnon & Co., 37 Burnett lane, was badly damaged by fire, Aug. 27, with a loss to building and machinery estimated at $94,000. The company will rebuild.

HANNA



PIG IRON

"BUFFALO" Buffalo, N. Y.
Foundry, Malleable, Bessemer, Basic.

"CHERRY VALLEY" Leetonia, O.
Foundry, Malleable

"DOVER" Canal Dover, O.
Basic, Malleable

"FANNIE" W. Middlesex, Pa.
Basic, Bessemer

"VICTORIA" Pt. Colborne, Ont.
Foundry, Malleable

"ZUG" Detroit, Mich.
Foundry, Malleable, Basic

IRON ORE COAL COKE

M. A. HANNA & CO.

Sales Agents

BUFFALO CLEVELAND PITTSBURG
DETROIT TORONTO

HANNA

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.40
Mesabi Bessemer, 55 iron	6.15
Old range non-Bess., 51½ iron	5.65
Mesabi non-Bess., 51½ iron	5.50

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.24c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.60c to 4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chi.	5.52c
No. 10 blue anl. sheets, Cleve.	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl., sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cinci.	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sh., Detroit	5.48c
No. 28 black sheets, Chgo.	6.27c
No. 28 black sheets, Cleve.	6.42c
No. 28 black sheets, Cinci.	6.48c
No. 28 black, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chgo.	7.52c
No. 28 galv. sheets, Cleve.	7.67c
No. 28 galv. sheets, Cinci.	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.59c
No. 28 galv. sheets, Buffalo	7.70c
Hoops, Cleveland	4.92c
Hoops, Detroit	4.98c
Hoops, Buffalo	4.95c
Cold rolled sheets, Buffalo	6.45c
Cold rolled steel	list and 10

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$23.00 to 23.50
Bundled sheets, Pittsburgh	22.00
Bundled sheets, Cleveland	26.00 to 27.00
Bundled sheets, Buffalo	24.00 to 25.00
Boiler plate, cut, No. 1, Chg.	27.50 to 28.50
Boiler plate, cut, No. 1, St. L.	25.50 to 26.00
Frogs, switches, guards, St. L.	28.50 to 29.00
Frogs, switches, guards, Chgo.	29.00
Heavy melting steel, Pitts.	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chgo.	29.00
Heavy melt'g steel, Cleveland	29.00
Heavy melting steel, Cinci.	28.00 to 28.50
Heavy melt'g steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.00
Heavy melting steel, St. L.	28.50 to 29.00
Heavy melt'g steel, Birming.	27.00 to 27.50
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pitts.	26.00
Baled sheets, Chgo	29.00
Knuckles, couplers, Chgo.	34.00
Knuckles, coup., St. Louis	33.00 to 33.50
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. crops eastern Pa.	39.00
Low phos. guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Springs, Chgo.	34.00
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	33.50 to 34.00
Steel rails, old, Birmingham	29.00 to 30.00
Stove plate, Chgo.	28.00 to 28.50
Stove plate, Cincinnati	22.50 to 23.00
Stove plate, St. Louis	26.00 to 27.00
Stove plate, N. J. points	27.25
Stove plate, Birmingham	23.00 to 25.00
Stove plate, Buffalo	27.50 to 28.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	26.50 to 27.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$7.50
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York (r. and w.)	7.50
Philadelphia (r. and w.)	6.60
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70
Duluth, Minn., to:	
Minneapolis, St. Paul	$1.60
Mayville, Wis.:	
Minneapolis-St. Paul	$2.20

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	56.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Angle bars, iron, Chgo.	39.00
Angle bars, steel, St. Louis	32.00 to 32.50
Angle splice bars, St. Louis (iron)	37.50 to 38.00
Arch bars, transoms, Chgo.	45.50 to 46.50
Arch bars and transoms, St. Louis	45.50 to 46.00
Busheling, No. 1, Cleveland	30.50 to 31.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling, No. 1, Cincinnati	26.00 to 26.50
Busheling, No. 1, Chgo.	30.50 to 31.00
Busheling, No. 2, Chgo.	20.50 to 21.50
Busheling, No. 1, St. Louis	29.00 to 29.50
Cast borings, New York	16.25 to 16.75
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast, borings, Cleveland	18.50 to 19.00
Cast borings, Cincinnati	16.50 to 17.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 18.00
Cast borings, Chgo.	18.50 to 19.00
Cast borings, St. Louis	18.50 to 19.00
City wrought, long, N. Y.	30.00
Cut forge, Chgo.	32.50 to 33.00
Forge flashings, small, Cleve.	28.00 to 29.00
Forge flashings, large, Cleve.	27.50 to 28.00
Forge No. 1, eastern Pa.	28.00 to 29.00
Grate bars, Buffalo	27.50 to 28.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	27.25
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	34.00 to 35.00
Iron rails, St. Louis	38.50 to 39.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	17.00 to 17.50
Machine turnings, Cleve.	18.50 to 18.75
Machine turnings, Buffalo	17.00 to 17.50
Machine turnings, N. Y.	16.25 to 16.75
Machine turnings, Pitts.	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birming.	16.00 to 17.00
Machine turnings, Chicago	18.00 to 18.50
Machine shop turnings, St. L.	18.50 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	28.00 to 28.50
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mch. cast, No. 1, Buff.	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt., No. 1, east Pa.	34.00
Railroad wrgt. No. 1 Cinci.	33.50 to 34.00
Railroad wrgt., No. 1, Cleve.	34.00
R. R. wrought, No. 1, Pitts.	34.00
Railroad wrgt., No. 2, Chgo.	32.50 to 33.00
Railroad wr'ght, No. 1, Chgo.	33.50 to 34.00
R. R. wrgt. No. 1, Birming.	29.00 to 30.00
No. 1 yard wrought East Pa.	33.00
No. 1 busheling wrgt., E. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. L.	33.50 to 34.00
Railroad wrought, No. 2	32.50 to 33.00
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, eastern Pa.	33.00
Wrought pipe, ungraded, eastern Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turn'gs, E. Pa.	24.00
Heavy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, eastern Pa.	39.00
Steel car axles, Pittsburgh	46.50
Steel car axles, Birmingham	38.00 to 40.00
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, eastern Pa.	46.50
Steel car axles, Chgo.	46.50
Shafting, St. Louis	38.00 to 39.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels, (iron), Pitts.	$29.00
Car wheels, (steel), Pitts.	34.00 to 35.00
Car wheels, eastern Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	29.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birming.	28.00 to 29.00
Cast, No. 1, Birmingham	29.00 to 33.00
Cast, No. 1, cupola east. Pa.	34.00
Cast, No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Cincinnati	33.00 to 34.00
Cast, 1, heavy, N. Y.	32.25 to 32.50
Cast, 1, machy., N. Y.	32.25 to 32.50
Cast, No. 1, Chicago	34.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	32.00 to 32.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, east. Pa.	29.00
Malleable, cupola, East Pa.	33.00
Malleable railroad, Chgo.	34.00
Malleable, agricultural, Chgo.	33.00 to 33.25
Malleable railroad, St. Louis	32.00 to 32.50
Malleable agricultural, St. L.	31.50 to 32.00

MISCELLANEOUS USES

Boiler punchings, Chgo.	36.00 to 36.50
Reroll. rails, 5 ft. & ov., Pitts.	34.00
Reroll. rails, 5 ft. & ov., Chgo.	34.00
Reroll. rails, 5 ft. & ov., E. Pa.	34.00
Reroll. rails, 5 ft. & ov., St. L.	33.50 to 34.00
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birm.	37.50 to 38.50
Locomotive tires, Chgo.	45.50 to 46.50
Locomotive tires, St. Louis	43.50 to 44.00